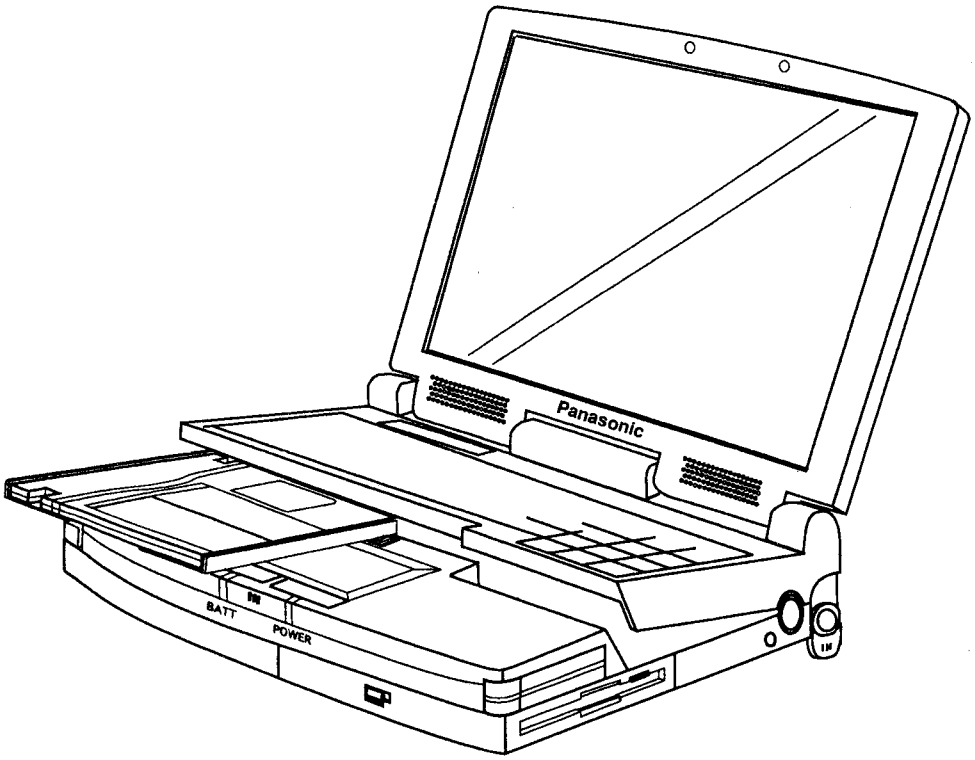
ORDER NO. CPD9607014C0
G22

Service Manual

Notebook Computer

CF-62



This is the Service Manual for the following areas.

- M ... for U.S.A. and Canada
- E ... for U.K.
- G ... for Germany
- F ... for France

Model Number Reference

The models in the CF-62 series are numbered in accordance with the types of the CPU, LCD and HDD etc. featured by the product.

Model No.CF-62 □ □ □ □ AA □

CPU type
- C: for Pentium™Processor /100MHz
- E: for Pentium™Processor /133MHz

LCD type
- J: for 12.1 TFT Color /800 X 600 pixels
- X: for 12.1 TFT Color /1024 X 768 pixels

HDD type
- 8: for 810MB
- C: for 1.35GB

RAM size
- 4: for 16MB

Area
- M: for U.S.A. and Canada
- E: for U.K.
- G: for Germany
- F: for France

Panasonic®

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For U.K.

WARNINGS

- Disconnect the mains plug from the supply socket when not in use.
- This equipment is not designed for connection to an IT power system.
- Care must be taken to ensure that the integrity of the PELV (Protective Extra Low Voltage) system is maintained when interface to other parts of equipment takes place.

This apparatus must be earthed for your safety.

To ensure safe operation three pin-plug (not for U.K.) must be inserted only into a standard tree-pin power point which is effectively earthed through the normal household wiring.
Ensure the main outlet socket is easily accessible to enable the user to isolate the apparatus from the main supply by withdrawing the main plug.
Extension cords used with the equipment must be three core and be correctly wired to provide connection to earth. Wrongly wired extension cords are major cause of fatalities.
The fact that the equipment operates satisfactorily does not imply that the power point is earthed and that the installation is completely safe.
For your safety, if any doubt about the effective earthing of the power point, consult a qualified electrician.

IMPORTANT

The wires in this mains lead are coloured in accordance with the following code:

Green-and-Yellow: Earth
Blue: Neutral
Brown: Live

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured marking identifying the terminals in your plug, produced as follows: The wire which is coloured GREEN-and-YELLOW must be connected to the terminal in the plug which is marked by the letter E or by the safety earth symbol or coloured GREEN of GREEN-and-YELLOW.
The wire which is coloured BLUE must be connected to the terminal which is marked with the letter N or coloured BLACK.
The wire which is coloured BROWN must be connected to the terminal which is marked with the letter L or coloured RED.

LITHIUM BATTERY ⚠

- **CAUTION**
  Danger of explosion if battery is incorrectly replaced.
  Replace only with the same or equivalent type recommended by the equipment manufacture.
  Discard used batteries according to the manufacturer's instructions.

LITHIUMBATTERIE ⚠

Vorsicht!
Explosionsgefahr bei unsachgemäßem Austausch der Batterie. Ersatz nur durch denselben order einen vom Hersteller empfohlenen ähnlichen Typ. Entsorgung gebrauchter Batterien nach Angaben des Herstellers.

PILE AU LITHIUM ⚠

ATTENTION: IL Y A DANGER D'EXPLOSION S' IL Y A REMPLACEMENT INCORRECT DE LA PILE. REMPLACER UNIQUEMENT AVEC UNE PILE DU MÈME TYPE OU D'UN TYPE RECOMMANDÉ PAR LE CONSTRUCTEUR. METTRE AU RÉBUT LES PILES USAGÉES CONFORMÉMENT AUX INSTRUCTIONS DU FABRICANT.

LASER SAFETY INFORMATION

For U.S.A.

Class 1 LASER Product

This product is certified to comply with DHHS Rules 21 CFR Subchapter J.
This product complies with European Standard EN60825 (or IEC Publication 825)

For all areas

This equipment is classified as a class 1 level LASER product and there is no hazardous LASER radiation.

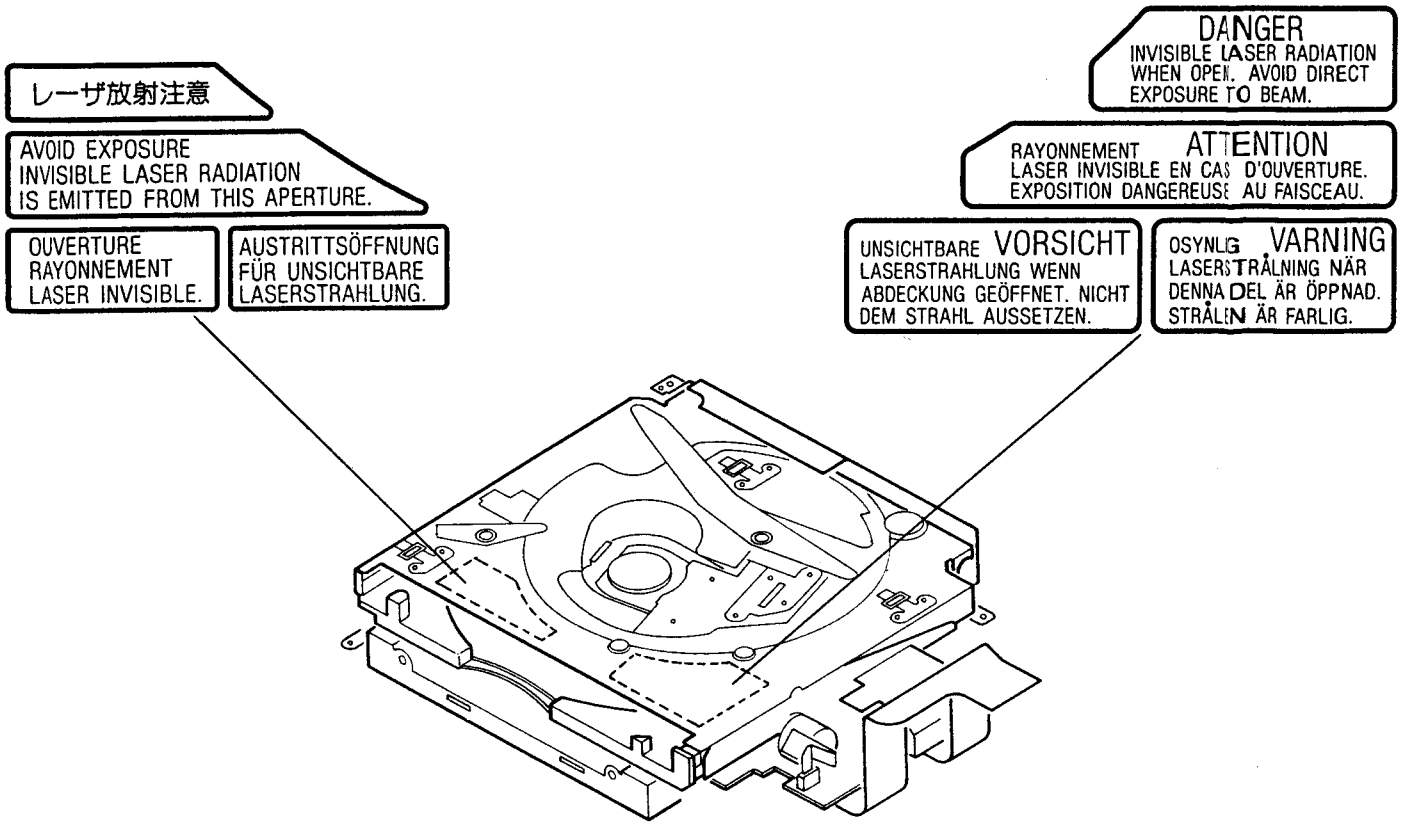
Caution:
(1) Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.
(2) The drive is designed to be incorporated into a computer-based system or unit which has an enclosing cover. It should never be used as a stand alone drive.

Danger:
The serviceman should not remove the cover of drive unit and should not service because the drive unit is a non-serviceable part.
Please check DANGER label on PD drive unit.

- Unplug the AC power cord to the equipment before opening the top cover of the drive.
- When the power switch it on, do not place your eyes close to the front panel door to look into the interior of the unit.

LASER Specification

Class 1 level LASER Product
Wave Length: 775-820 nm



PRECAUTION FOR LASER DIODE

For U.S.A.

Caution:

This product utilizes a LASER diode. When the unit is turned ON, invisible LASER radiation is emitted from the pick-up lens.

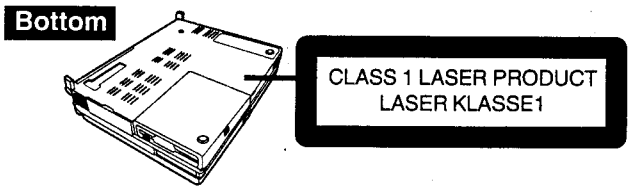
1. Do not look directly into the pick-up lens.
2. Do not use any optical instrument to look at the pick-up lens.
3. Do not adjust the preset variable resistor on the optical pick-up.
4. Do not disassemble the optical pick-up unit.
5. If the optical pick-up is replaced, use the manufacturer's specified replacement pick-up only.
6. Use of control or adjustment or performance of procedures other than those specified herein may result in hazardous radiation exposure.

For Europe

Caution:

This product utilizes a LASER diode. When the unit turned ON, invisible LASER radiation is emitted from the pick-up lens. LASER radiation from the pick-up lens is safety level, but be sure of the following:

1. Do not disassemble the optical pick-up unit, since radiation from exposed LASER diode is dangerous.
2. Do not adjust the variable resistor on the pick-up unit. It was already adjusted.
3. Do not look at the focus lens using optical instruments.
4. Do not look at LASER diode directly or indirectly, when the unit is powered ON.



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1. Specifications

Model No.	CF-62EXC4AAM / CF-62EXC4AAE*1	CF-62CJ84AAM	CF-62 CJC4AAE*1
CPU	Pentium® Processor (133 MHz, 2.9 V)	Pentium® Processor (100 MHz, 2.9 V)	
LCD	12.1" Non Glare Active Matrix (TFT) 1024 X 768	12.1" Non Glare Active Matrix (TFT) 800 X 600	
VRAM	2 MB		
Memory	16 MB (Expandability 48 MB)		
Floppy Disk Drive	1.44 MB (Double-sided, High-density, Double track) 720 KB (Double-sided, Double-density, Double track)		
Hard Disk Drive*2	1.35 GB*3 (16 msec / Enhanced IDE)	810 MB*4	1.35 GB*3
PD/CD Drive	650 MB Removable Rewritable Optical Disk Drive / 4 X speed CD-ROM		
Sound	16 bits 44.1 KHz		
Speakers	Stereo Speakers (built in)		
Keyboard	Windows 95 Keyboard (for U.S.A.: 87keys, for U.K.: 89keys)		
Pointing Device	Touch Pad		
Indicator	Status LCD, LED X 2 (Battery, Power)		
Slots	PC (PCMCIA) Card Slots: 2 Slots for Type I or II / 1 Slot for Type III (supports CardBus, ZV Port (bottom slot)), Expansion RAM Slot, Multimedia Pocket Slot Output current limit: 3.3 V: 400 mA, 5 V: 400 mA, 12 V: 120 mA		
Ports	Parallel Port: Dsub 25-pin female Serial Port: Dsub 9-pin male Display Port: Mini Dsub 15-pin female External Mouse / Keyboard connector: Mini DIN 6-pin female Expansion Bus connector: Dedicated 240-pin female Headphone Jack: Stereo output (Miniature jack, 3.5 DIA) Impedance 32 Ω Output Power 4 mW (impedance 32 Ω) X 2 Audio-In Jack: Stereo input (Miniature Jack, 3.5 DIA) Input impedance 10 kΩ Input voltage range 0.5 Vp-p (Line-In) / 0.03 Vp-p (microphone) DC-IN Jack: Mini jack Infrared Communication Port: IrDA compliant Speed: 4.0 Mbit/sec		
Battery	Battery Pack: Lithium Ion 10.8 V, 5750 mAh, Operating Time : 2-4 hours (Depending on the condition) Backup Battery: Ni-MH (Nickel Metal Hydride), 7.2 V, 72 mAh Clock Battery: Coin type lithium battery, 3.0 V, Operating Time: approx. 10 years		
Power Saving	Suspend function, Hibernation function, Standby function		
Software	Operating Environment: Microsoft® Windows® 95 (pre-installed) Utility Programs: Setup program, Diagnostics program, WPDPOWER program, WLINEMIC program, Panasonic Sound Recorder program, CardWorks™ program, TranXit™ program, Seagate™ Backup program CF-62 On-Line Manual		
AC Adaptor	AC100 V-240 V 50 / 60 Hz Auto Sensing / Switching DC 15 V, 4 A		
Security	Password function (Supervisor Password, User Password, Coffee break Password)		
Physical Dimensions (Width X Height X Depth)	297 mm (11.7") X 60 mm (2.4") X 239 mm (9.4") (Not including protrusions)		
Weight	4.3 kg (9.5 lbs)		
Environment (Temperature/ Humidity range)	Operating: 5°C to 35°C (41°F to 95°F) / 30% to 80% RH (no condensation) Strage: -20°C to 60°C (-4°F to 140°F) / 30% to 90% RH (no condensation)		

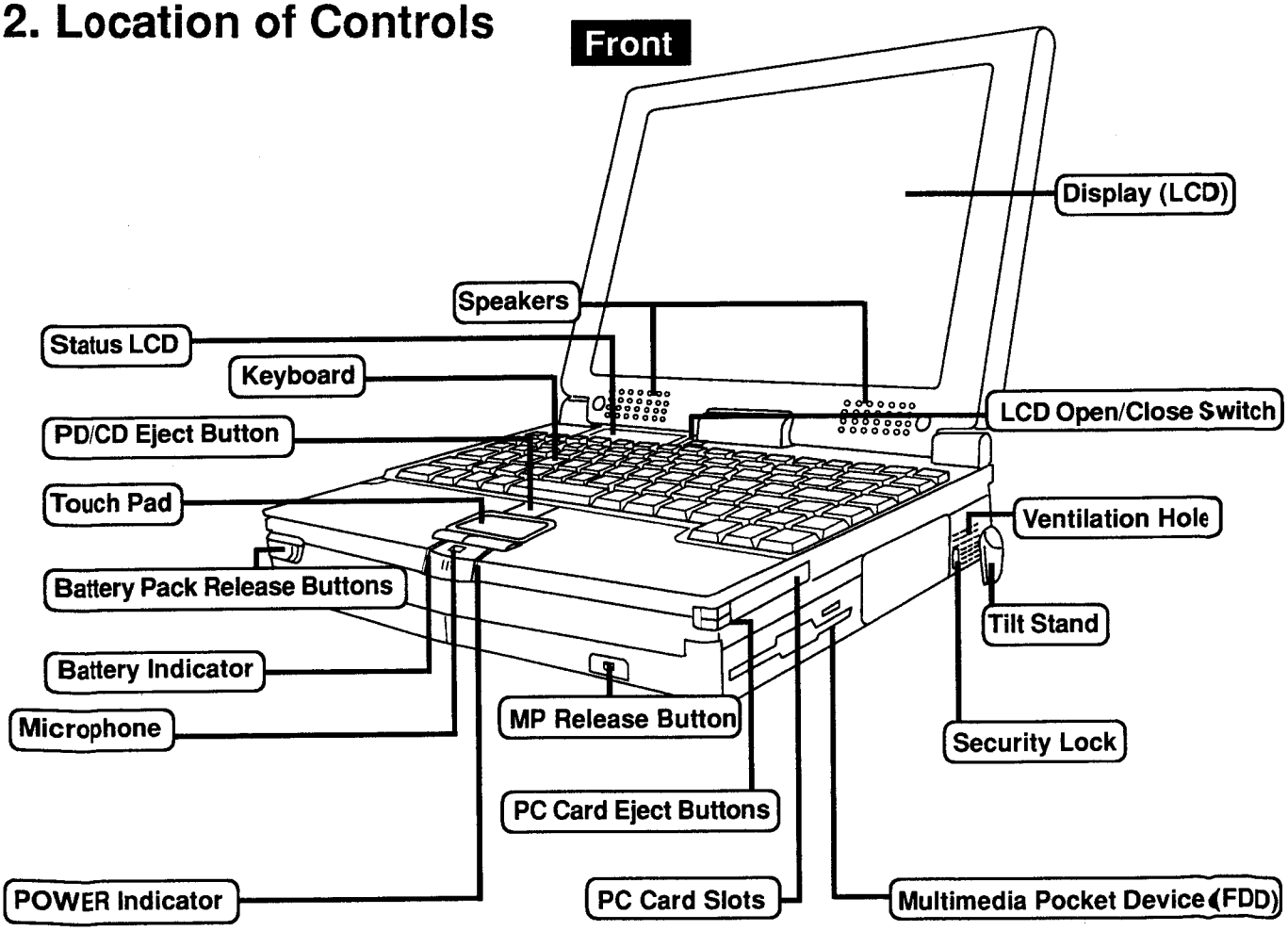
*1 E = U.K. model *2 The hard disk drive contains a partition (approx. 90 MB) for system use. *3 1 GB = 10^9 bytes
*4 1 MB = 10^6 bytes

For LCD

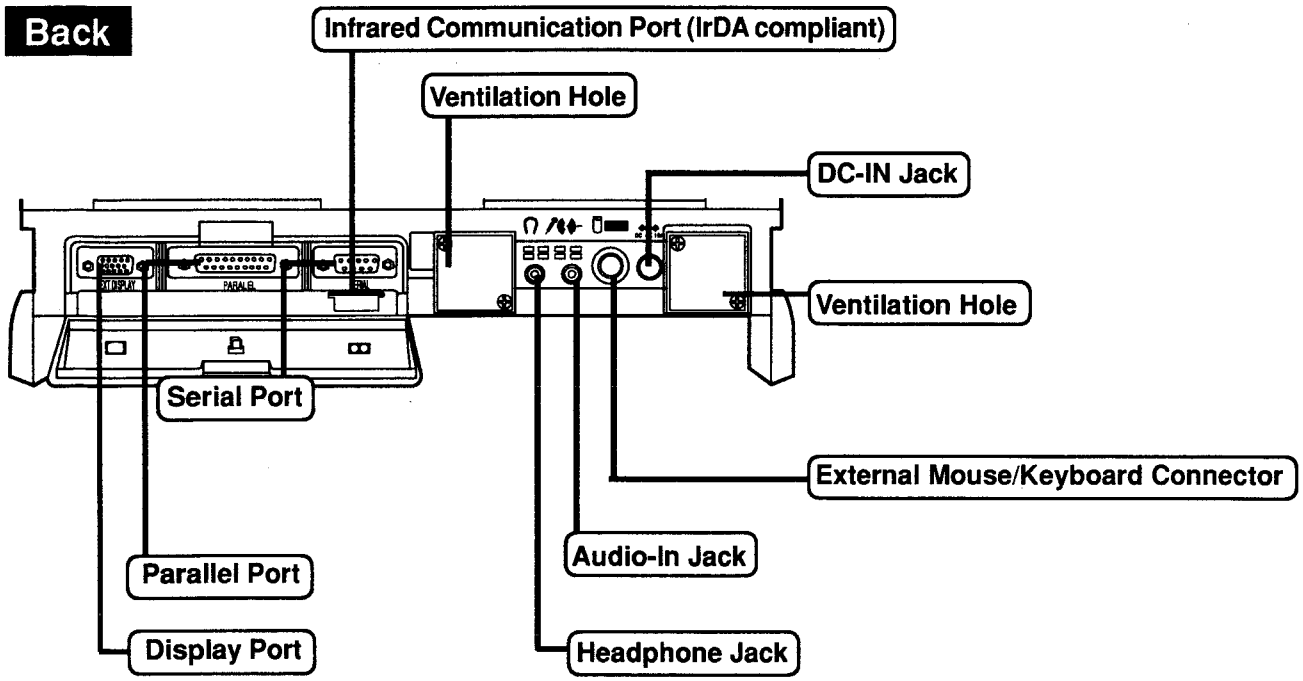
LCD	Resolution (Pixels)	Color	Refresh Rate (Hz)	
			CRT (Max.)	LCD/SIM (Max.)
800 X 600	640 x 480	256	85	60
	640 x 480	High Color	85	60
	640 x 480	True Color*	85	60
	800 x 600	256	85	60
	800 x 600	High Color	75	60
	800 x 600	True Color*	75	60
	1024 x 768	256	85	60
	1024 x 768	High Color	60	60
1024 X 768	640 x 480	256	85	60
	640 x 480	High Color	85	60
	640 x 480	True Color*	85	Not Available
	800 x 600	256	85	60
	800 x 600	High Color	75	60
	800 x 600	True Color*	75	Not Available
	1024 x 768	256	85	60
	1024 x 768	High Color	60	60

* LCD supports only 262144 (256K) colors.

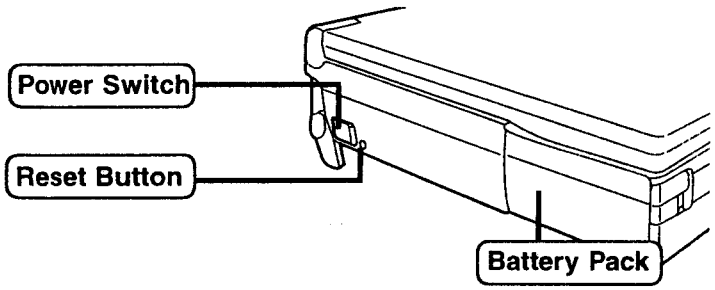
2. Location of Controls



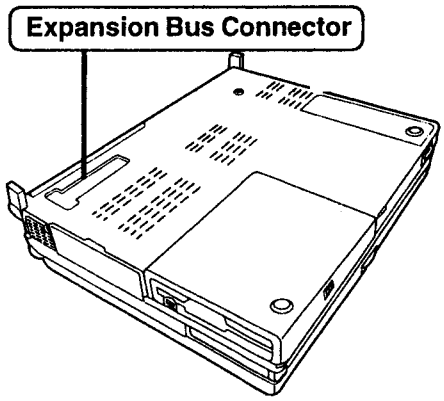
Back



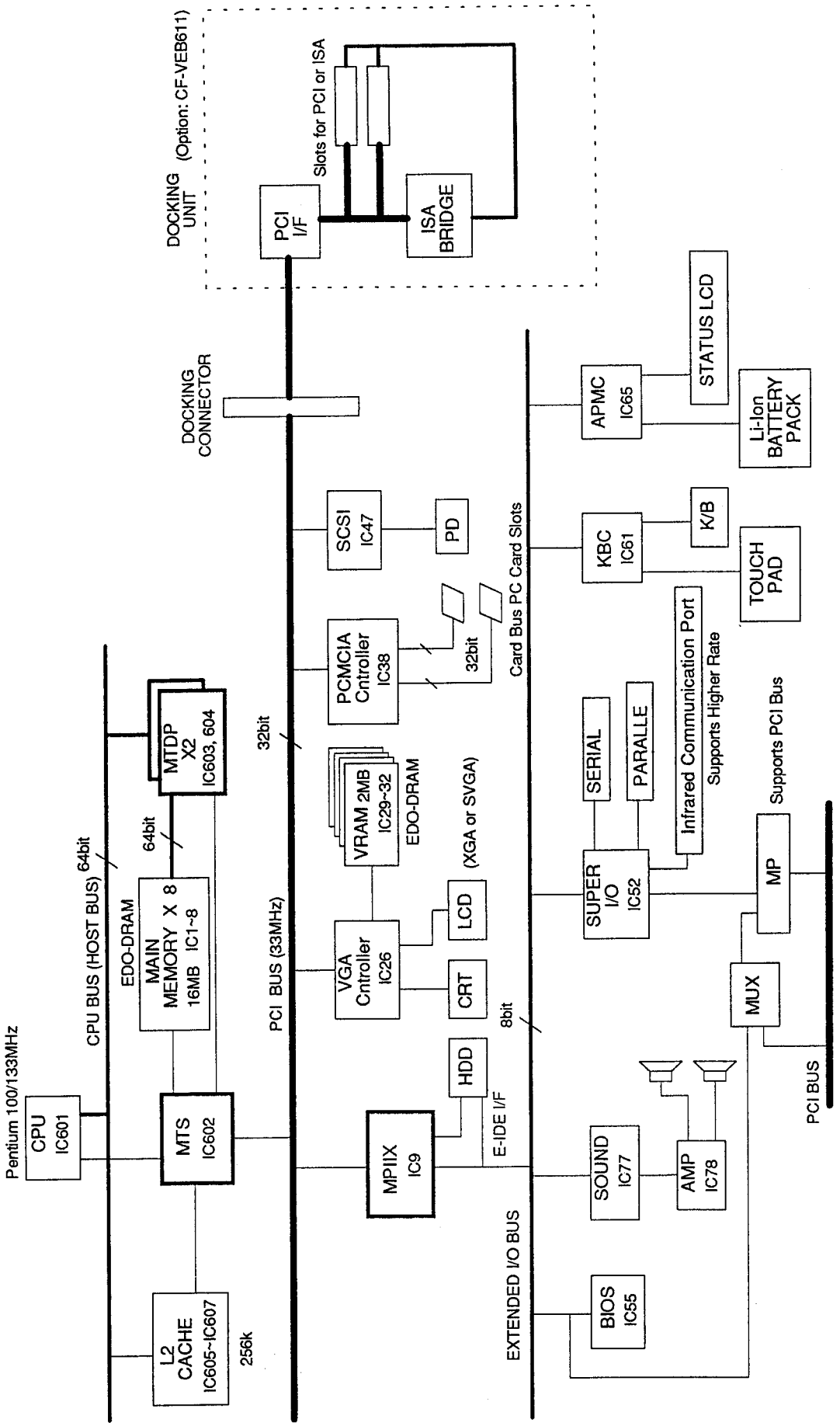
Left side



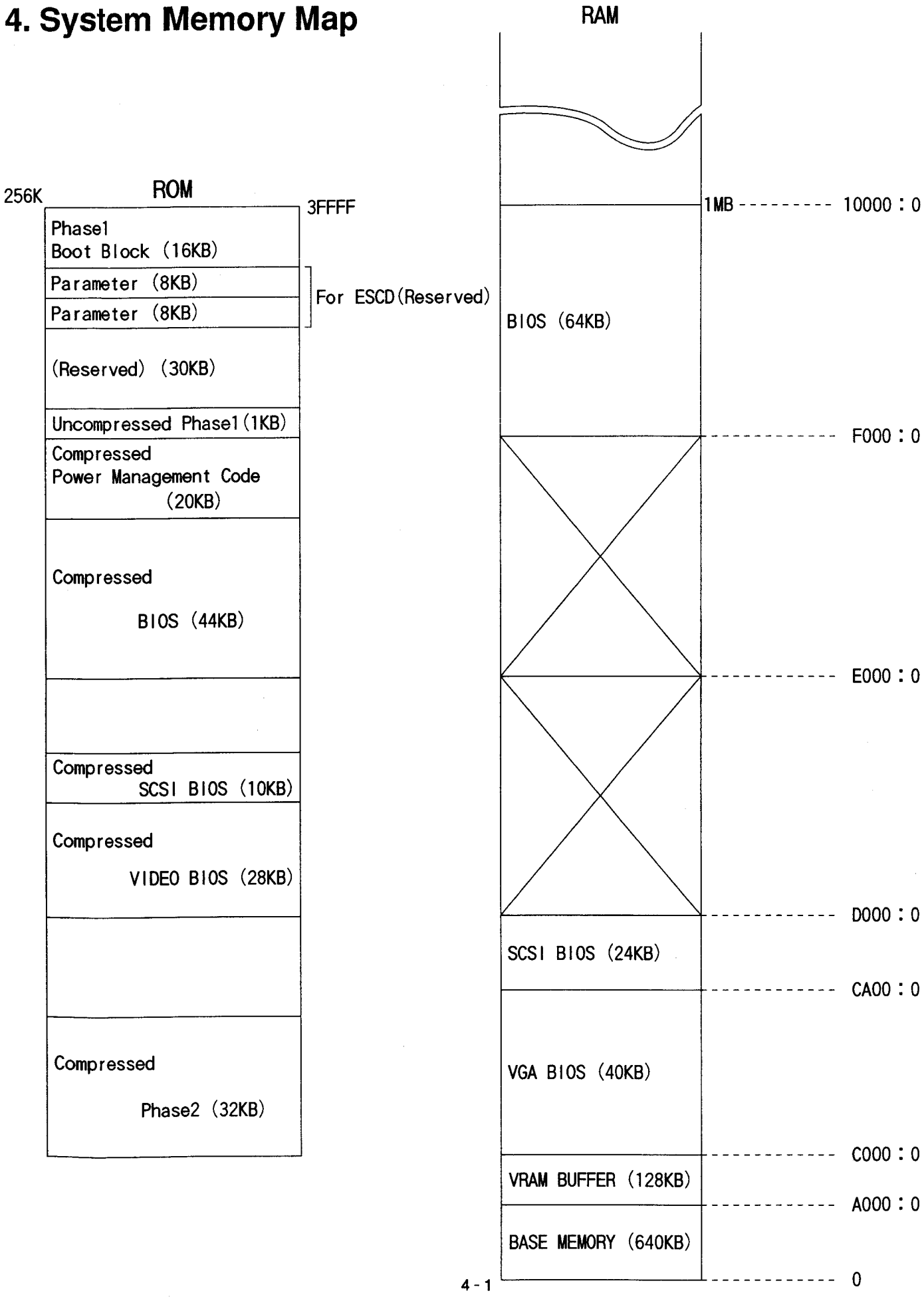
Bottom



3. Block Diagram



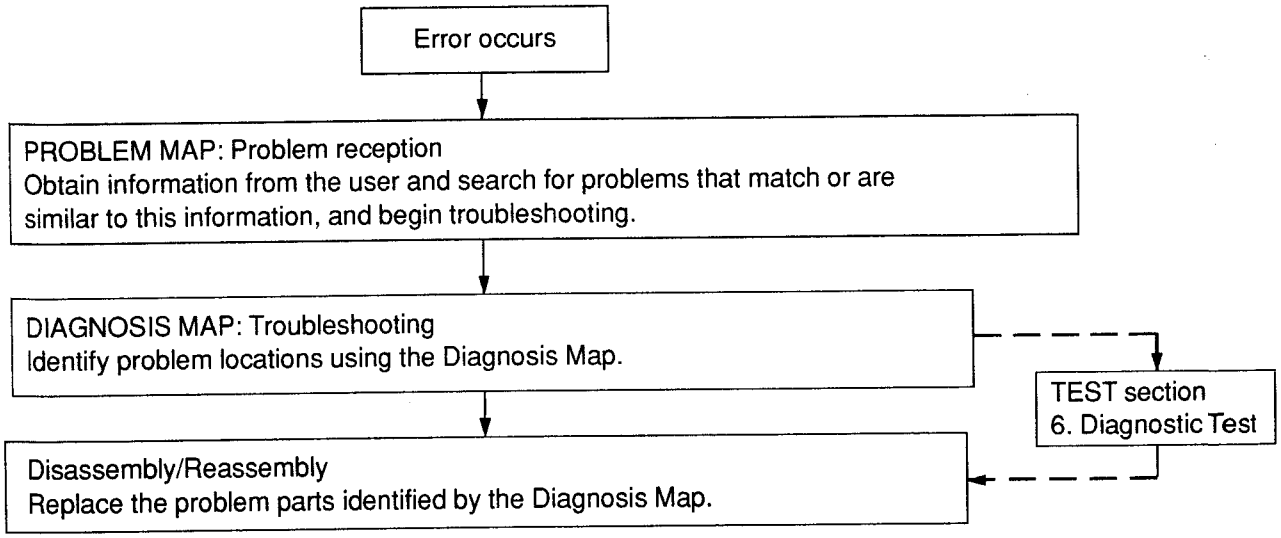
4. System Memory Map



5. Diagnosis Procedure

5.1 Outline of Diagnosis Procedure

If an error message is received from the unit, verify the location of the error in the Problem Map, and select the Diagnosis Map where the cause appears to be located.
Separate the problem locations in the Diagnosis Map, and replace the problem parts identified with the Diagnosis Map.

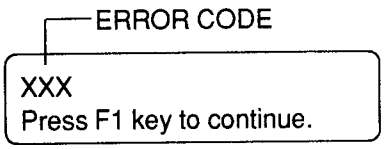

Error occurs
PROBLEM MAP: Problem reception
Obtain information from the user and search for problems that match or are similar to this information, and begin troubleshooting.
DIAGNOSIS MAP: Troubleshooting
Identify problem locations using the Diagnosis Map.
TEST section
6. Diagnostic Test
Disassembly/Reassembly
Replace the problem parts identified by the Diagnosis Map.

5.2 PROBLEM MAP

■ POST (Power on self test) ERROR

1) Startup Error Codes (Refer to page 5-5).

During POST (power on self test) following error codes may be displayed.
They are also displayed if a hardware failure occurs.

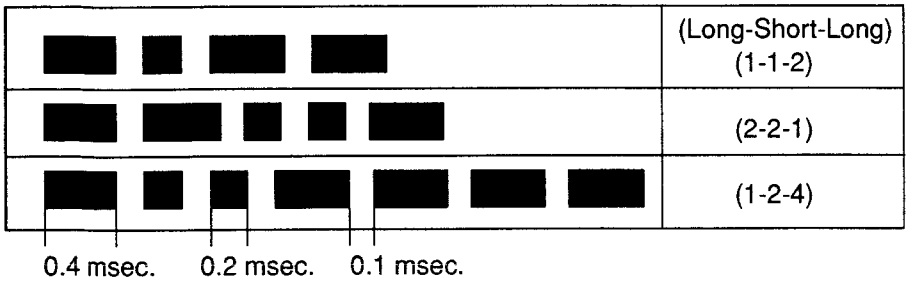


Press [F1] and one of these messages follows.

Code		Code	
062	Boot failure--default configuration used	301	Keyboard Error
101	System Board Failure	303	Keyboard Error
102	System Board Failure	604	Diskette Drive Error
106	System Board Failure	605	Diskette Drive Error
114	Adapter ROM Error	1780	Hard Disk Error
151	System Board Failure	1800	PCI Error
161	Bad CMOS Battery	1801	PCI Error
162	Configuration Change Has Occurred	1802	PCI Error
162	Configuration Error	1803	PCI Error
163	Data and Time Incorrect	1804	PCI Error
173	Configuration Change Has Occurred	1805	PCI Error
177	The security passwords have been corrupted	8601	Pointing Device

2) Beep Error Codes (Refer to Page 5-7).

Three examples of beep sound are shown below.
Length of bar shows sound duration.



■ BATTERY ERROR CODES

If the following error code appear on the status LCD,
reconnect the battery pack and the AC adapter.
If the error code continues to be displayed, refer to pages 5-8, 5-9.
Error Codes: E1, E2, E3, E4, E5, E6, E7, E8, E9, EA, EB, EC, ED.

■ MAIN UNIT PROBLEM

Problem	Symptom	Ref.Page
Power problem	No power is sent to the unit.	5-10
	Power cuts off during operation.	5-10
	Power cannot be turned off during operation.	5-10
System hangs	Unit does not start up when power is turned on.	5-11
	Unit hangs during operation.	5-11
Boot problem	When a device is selected for "Boot Up Drive", the system boots from a different device.	5-11
Date or Clock problem	Date or Time cannot be input.	5-11
	Date and Time does not change properly.	5-11
	Date and Time are not displayed.	5-11
Memory problem	Memory count is too large or too small.	5-11
Speaker problem	No Sound	5-11
	Volume does not work.	5-11
Battery pack problem	Battery pack will not charge.	5-11
	Battery pack overheats.	5-11

■ LCD PROBLEM

Problem	Symptom	Ref.Page
LCD does not display	No picture appears on the screen.	5-12
LCD display problem	Display is too dark or too bright.	5-12
	Display becomes vertical line or horizontal line.	5-12
	Some of the blocks on the screen do not display properly.	5-12
	A striped pattern is displayed.	5-12
	Lines and dots are omitted from the display.	5-12
	Dots appear.	5-12
	Display quality poor.(Fuzzy or slanted, etc.)	5-12
	Backlight does not turn on.	5-12
LCD display function problem	Character appearance is abnormal.	5-12
	Graphics are not displayed, although other characters do appear.	5-12
	Graphics pattern does not display properly.	5-12

■ KEYBOARD, MOUSE or TOUCH PAD PROBLEM

Problem	Symptom	Ref.Page
Keyboard problem	Key top cannot be pressed.	5-13
	Key top does not spring back after pressing.	5-13
	Unit will not accept inputs from any key.	5-13
	Input character is displayed as garbage.	5-13
	Keyboard unit does not open.	5-13
Mouse problem	Inputs from the mouse are not accepted properly.	5-13
TOUCH PAD problem	Inputs from the TOUCH PAD are not accepted properly.	5-13

■ FDD PROBLEM

Problem	Symptom	Ref.Page
FDD problem	FDD indicator is not displayed.	5-14
	Cannot insert floppy disk.	5-14
	Cannot remove floppy disk.	5-14
	Does not boot from FDD.	5-14
	Cannot read from floppy disk.	5-14
	Cannot write to floppy disk.	5-14
	Floppy disk is scratched or otherwise damaged.	5-14
	Content of floppy disk is destroyed.	5-14
	Damage to contents written to floppy disk.	5-14
	Damage to contents read from floppy disk.	5-14
	Abnormal sound.	5-14
	Diagnostic Test reports problem in FDC.	5-14

■ HDD PROBLEM

Problem	Description	Ref.Page
HDD problem	Does not boot from HDD.	5-15
	Cannot read from HDD.	5-15
	Cannot write to HDD.	5-15
	Damage to data written to HDD.	5-15
	Damage to data read from HDD.	5-15
	HDD contents are destroyed.	5-15
	Diagnostic Test reports problem in HDC or HDD.	5-15
	HDD indicator is not displayed.	5-15
	Abnormal sound.	5-15

■ SERIAL COMMUNICATION PROBLEM

Problem	Symptom	Ref.Page
Transmission problem	Data cannot be sent or received.	5-16
	Unit will not communicate with another computer when connected directly.	5-16
	Unit will not communicate with modem.	5-16
	Diagnostic Test reports problem in serial port.	5-16

■ PRINTING PROBLEM

Problem	Symptom	Ref.Page
Printing problem	Data does not print.	5-17
	Data prints out incorrectly.	5-17
	The unit hangs after outputting data to the printer.	5-17
	Print area is out of line.	5-17
	Data is printed all on one line.(Carriage return does not work.)	5-17

■ PD Drive PROBLEM

Problem	Symptom	Ref.Page
PD Drive Problem	PD indicator is not displayed.	5-17
	Cannot read from PD disk.	5-17
	Cannot write to PD disk.	5-17
	Tray does not open.	5-17
	Abnormal sound	5-17

■ PC CARD PROBLEM

Problem	Symptom	Ref.Page
PC CARD problem	Cannot insert PC CARD.	5-18
	Cannot remove PC CARD.	5-18
	PC CARD does not work properly.	5-18

■ STATUS LCD PROBLEM

Problem	Symptom	Ref.Page
STATUS LCD problem	Indicator is not displayed.	5-18

■ INFRARED COMMUNICATION PORT PROBLEM

Problem	Symptom	Ref.Page
Transmission problem	Data cannot be sent or received.	5-18

5.3 Diagnosis Map

■ Startup Error Code

No.	Error Code	Description	Troubleshooting procedure No.	Troubleshooting procedure	Result	Source of problem	Ref.Page
1	062	Default configuration in use	1-1	Check configuration.	——	Configuration	——
2	101	Interrupt controller failure	2-1	——	——	Main P.C.B.	7-10
3	102	External ROM checksum error	3-1	——	——	Docking unit or Bus connectors or Expansion card	——
4	106	Diskette controller failure	4-1	——	——	Main P.C.B.	7-10
5	114	Adapter ROM checksum error	5-1	Does the system return to normal if the expansion card is removed?	YES	Go to No. 5-2	——
					NO	Main P.C.B. or Bus connectors or CPU P.C.B.	7-10
			5-2	Replace the expansion card. Does operation return to normal?	YES	Expansion card	——
					NO	Main P.C.B.	7-10
6	151	Real Time Clock failure	6-1	——	——	Main P.C.B.	7-10
7	161	Dead RTC Battery	7-1	Does resetting through SETUP correct the problem?	YES	Error during SETUP	——
					NO	Main P.C.B.	7-10
8	162	Configuration error	8-1	Check configuration.	——	Configuration	——
9	162	CMOS Checksum error	9-1	Were the correct settings selected during SETUP?	YES	Go to No. 9-2	——
					NO	Go to No. 9-4	——
			9-2	Replace the FDD. Does operation return to normal?	YES	FDD	7-2,7-14
					NO	Go to No. 9-3	——
			9-3	Replace the HDD. Does operation return to normal?	YES	HDD	7-2,7-14
					NO	Go to No. 9-4	——
			9-4	Does resetting through SETUP correct the problem?	YES	Error during SETUP	——
					NO	Main P.C.B.	7-10
10	163	Real time Clock is not updating	10-1	Does resetting the date/time in SETUP correct the problem?	YES	Error during SETUP	——
					NO	Main P.C.B.	7-10
11	173	ROM configuration changed	11-1	——	——	(Flash ROM BIOS is updated)	——
12	177	Password is corrupted. (CMOS RAM is broken)	12-1	Does resetting through SETUP correct the problem?	——	See "Beep Error Code" No.1	5-7
13	201	Memory size/data error	13-1	Replace the expansion RAM card. Does operation return to normal? (Go to "NO" if not connected.)	YES	Expansion RAM card	7-4
					NO	Main P.C.B. or CPU P.C.B.	7-10

No.	Error Code	Description	Troubleshooting procedures No.		Result	Source of problem	Ref.Page
14	301	Keyboard failure	14-1	Is the keyboard properly connected?	YES	Go to No. 15-1.	———
					NO	Keyboard was not connected properly	7-6
15	303	keyboard controller failure	15-1	Replace the keyboard. Does operation return to normal?	YES	Keyboard	7-15
					NO	Main P.C.B. or LCD FPC	7-10,7-12
16	604	Diskette drive 0 failure	16-1	Is the FDD properly connected?	YES	Go to No. 16-2	———
					NO	FDD was not connected properly	7-2,7-14
			16-2	Replace the FDD Pack. Does operation return to normal?	YES	FDD or FDD FPC	7-2,7-14
					NO	Main P.C.B. or LCD FPC	7-10,7-12
17	605	Diskette unlocked problem	17-1	Is the FDD properly connected?	YES	Go to No. 17-2	———
					NO	FDD was not connected properly	7-2,7-14
			17-2	Replace the FDD Pack. Does operation return to normal?	YES	FDD or FDD FPC	7-2,7-14
					NO	Main P.C.B. or LCD FPC	7-10,7-12
18	1780	Fixed disk 0 failure	18-2	Replace the HDD Pack. Does operation return to normal?	YES	HDD or HDD FPC	7-2,7-14
					NO	Main P.C.B.	7-10
19	1800	No more IRQ available	19-1	Check configuration.	—	———	———
20	1801	No more room for option ROM	20-1	The expansion card cannot be used.	—	———	———
21	1802	No more I/O space available	21-1	———	—	Docking unit or Bus connectors or Expansion card	———
22	1803	No more memory (above 1MB) available	22-1	———	—	Docking unit or Bus connectors or Expansion card	———
23	1804	No more memory (below 1MB) available	23-1	The expansion card cannot be used.	—	———	———
24	1805	Checksum error or 0 size opt. ROM	24-1	———	—	Docking unit or Bus connectors or Expansion card	———
25	8601	Pointing device failure	25-1	Replace the mouse. Does operation return to normal?	YES	Mouse	———
					NO	Go to No. 25-2	———
			25-2	Replace the keyboard. Does operation return to normal?	YES	Keyboard	7-15
					NO	Go to No. 25-3	———
			25-3	Replace the TOUCH PAD. Does operation return to normal?	YES	TOUCH PAD	7-15
					NO	Main P.C.B. or LCD FPC	7-10,7-12
26	I999 0301	Hard disk failure	26-1	Does executing FDISK correct the problem?	YES	Format data destroyed	———
					NO	Go to No. 26-2	———
			26-2	Replace the HDD Pack. Does operation return to normal?	YES	HDD or HDD FPC	7-2,7-14
					NO	Main P.C.B. or LCD FPC	7-10,7-12

No.	Error Code	Description	Troubleshooting procedures No.	Troubleshooting procedures	Result	Source of problem	Ref.Page
27	I999 0305	An operating system could not be found	27-1	Does executing FDISK correct the problem?	YES	Format data destroyed.	———
					NO	Go to No. 27-2	———
			27-2	Replace the HDD Pack. Does operation return to normal?	YES	HDD or HDD FPC	7-2,7-14
					NO	Main P.C.B. or LCD FPC	7-10,7-12

■ Beep Error Code

No.	Beep Sound	Description	Source of problem	Ref.Page
1	1-1-2	CPU register test failure	CPU P.C.B.	7-10
2	1-1-3	CMOS write/read test failure	Main P.C.B.	7-10
3	1-1-4	BIOS ROM checksum failure	Main P.C.B.	7-10
4	1-2-1	Programmabe Interval Timer test failure	Main P.C.B.	7-10
5	1-2-2	DMA initialization test in progress or failure	Main P.C.B.	7-10
6	1-2-3	DMA page register write/read test in progress or failure	Main P.C.B.	7-10
7	1-2-4	RAM refresh verification failure	CPU P.C.B.	7-10
8	1-3-1	1st 64K RAM test failure	Main P.C.B. or CPU P.C.B.	7-10
9	1-3-3	Slave DMA register test in progress or failure	Main P.C.B.	7-10
10	1-3-4	Master DMA register test in progress or failure	Main P.C.B.	7-10
11	1-4-1	Master interrupt mask register test failure	Main P.C.B.	7-10
12	1-4-2	Slave interrupt mask register test failure	Main P.C.B.	7-10
13	1-4-3	Interrupt vector loading failure	Main P.C.B.	7-10
14	1-4-4	Keyboard controller test failure	Main P.C.B.	7-10
15	2-1-3	Screen initialization in progress	Main P.C.B.	7-10
16	2-1-4	Screen memory test in progress	Main P.C.B.	7-10
17	2-2-1	Screen retrace tests in progress	Main P.C.B.	7-10
18	2-2-2	Search for video ROM in progress	Main P.C.B.	7-10
19	2-2-4	Timer tick interrupt test in progress or failure	Main P.C.B.	7-10
20	2-3-1	Interval timer channel 2 test in progress or failure	Main P.C.B.	7-10
21	2-3-2	RAM test in progress or failure above address 0FFFFH	CPU P.C.B. or Main P.C.B.	7-10
22	2-3-3	Time-of-Day clock test failure	Main P.C.B.	7-10
23	2-3-4	Serial port test test in progress or failure	Main P.C.B.	7-10
24	2-4-1	Parallel port test test in progress or failure	Main P.C.B.	7-10
25	2-4-2	Math Coprocessor test in progress or failure	CPU P.C.B. or Main P.C.B.	7-10

■ Battery Error Code

See Battery Signal Check Point on page 5-19 for checking battery signals.

No.	Error Code	Description	Troubleshooting procedures No.	Troubleshooting procedures	Result	Source of problem	Ref.Page
1	E1	Overcharged	1-1	Connect the AC adapter after operating the unit with the battery for one minute. Does operation return to normal?	YES	Go to No. 1-2.	———
					NO	Battery Pack	7-3
			1-2	Replace the Battery Pack and charge fully. Does operation return to normal?	YES	Battery Pack	7-3
					NO	Main or Power P.C.B.	7-10,7-11
2	E2	Overdischarged	2-1	Replace the Battery Pack. Does operation retrun to normal?	YES	Battery Pack	7-3
					NO	Main P.C.B.	7-10
3	E3	Cell balance error	3-1	Replace the Battery Pack. Does operation retrun to normal?	YES	Battery Pack	7-3
					NO	Main P.C.B.	7-10
4	E4	Switching error	4-1	Replace the Battery Pack. Does operation retrun to normal?	YES	Battery Pack	7-3
					NO	Main P.C.B.	7-10
5	E5	Temperature is out of range		Battery LED flashes 5 times.	———		
			5-1	Leave as is if in charge wait mode. (This error code will not be displayed.)	———		
			5-2	Try changing the battery if charging does not begin even though the temperature is normal. Does operation retrun to normal?	YES	Battery Pack	7-3
					NO	Main P.C.B.	7-10
6	E6	Exceed maximum charging amount		Connect the AC adapter and the battery with the least remaining capacity to the unit.	———		
			6-1	When the unit is off does 120mA ~ 3.0A in charge current flow, and when the unit is on does 120mA ~ 800mA in curent flow?	YES	Battery Pack	7-3
					NO	Main or Power P.C.B.	7-10
7	E7	Exceed maximum charging time		Connect the battery and the AC adapter to the unit.	———		
			7-1	Does BATTCS = High (5V)?	YES	Go to No. 7-2.	———
					NO	Main P.C.B.	7-10
			7-2	Does the BATTRXD of the battery send data every two seconds?	YES	Main P.C.B.	7-10
					NO	Battery Pack	7-3
8	E8	Serial communication error	8-1	Replace the Battery Pack. Does operation retrun to normal?	YES	Battery Pack	7-3
					NO	Main P.C.B.	7-10

No.	Error Code	Description	Troubleshooting procedures No.		Result	Source of problem	Ref.Page
9	E9	Overcharged		Connect the battery and the AC adapter to the unit.		———	
			9-1	Is the battery voltage at least 13.0V?	YES	Go to the No. 9-3.	———
					NO	Go to the No. 9-2.	———
			9-2	Does the signal BVOLTNG = Low (0V)?	YES	Main P.C.B.	7-10
					NO	Main or Power P.C.B.	7-10,7-11
			9-3	During battery charge (at least 13.0V) does the signal CHGDOWN emit a 5msec low pulse?	YES	Power P.C.B.	7-11
					NO	Main P.C.B.	7-10
10	EA	Temperature is out of range		Battery LED flashes 5 times.		———	
			10-1	Leave as is if in charge wait mode. (This error code will not be displayed.)		———	
			10-1	Try changing the battery if charging does not begin even though the temperature is normal. Does operation retrun to normal?	YES	Battery Pack	7-3
					NO	Main P.C.B.	7-10
11	EB	No response from battery		Connect the battery and the AC adapterto the unit.		———	
			11-1	Does BATTCS = High (5V)?	YES	Go to No.11-2.	———
					NO	Main P.C.B.	7-10
			11-2	Does the BATTRXD of the battery send data every two seconds?	YES	Main P.C.B.	7-10
					NO	Battery Pack	7-3
12	EC	Charging current do not decrease	12-1	Remove the R187 from the main P.C.B.. Does 120mA ~ 270mA in charging current flow when charging?	YES	Go to No. 12-2.	———
					NO	Power P.C.B.	7-11
			12-2	When the battery voltage approaches 13.0V during charging, does the CHGDOWN generate a 5msec low pulse?	YES	Power P.C.B.	7-11
					NO	Main P.C.B.	7-10
13	ED	Abnormal charging current		Connect the AC adapter and the battery with the least remaining capacity to the unit.		———	
			6-1	When the unit is off does 120mA ~ 3.0A in charge current flow, and when the unit is on does 120mA ~ 800mA in current flow?	YES	Battery Pack	7-3
					NO	Main or Power P.C.B.	7-10,7-11

■ MAIN UNIT DIAGNOSIS (1/2)

Make sure that connecting cables, connectors and AC adapter are not loose or disconnected prior to testing.

No.	Symptom	Troubleshooting procedures No.		Result	Source of problem	Ref.Page
1	No power is sent to the unit. (when using AC)	1-1	Is electricity being input properly.	YES	Go to No. 1-2	———
				NO	Power input line	———
		1-2	Replace the AC adapter. Does operation return to normal?	YES	AC adapter	———
				NO	Go to No. 1-3	———
		1-3	Replace the Power P.C.B.. Does operation return to normal?	YES	Power P.C.B.	7-11
				NO	Main P.C.B.	7-10
	No power is sent to the unit. (When using the Battery Pack)	1-4	Is the Battery Pack charged?	YES	Go to No. 1-5	———
				NO	Connect the AC adapter and charge	———
		1-5	Replace the Battery Pack. Does operation return to normal?	YES	Battery Pack	7-3
				NO	Go to No. 1-6	———
		1-6	Replace the Power P.C.B.. Does operation return to normal?	YES	Power P.C.B.	7-11
				NO	Main P.C.B.	7-10
2	Power cuts off during operation. (When using AC)	2-1	Replace the AC adapter. Does operation return to normal?	YES	AC adapter	———
				NO	Go to No. 2-2	———
		2-2	Replace the Power P.C.B.. Does operation return to normal?	YES	Power P.C.B.	7-11
				NO	Main P.C.B.	7-10
	Power cuts off during operation. (When using the Battery Pack)	2-3	Is the Battery Pack charged?	YES	Go to No. 2-4	———
				NO	Connect the AC adapter and charge	———
		2-4	Replace the Battery Pack. Does operation return to normal.	YES	Battery Pack	7-3
				NO	Go to No. 2-5	———
		2-5	Replace the Power P.C.B. Does operation return to normal.	YES	Power P.C.B.	7-11
				NO	Main P.C.B.	7-10
3	Power cannot be turned off during operation.	3-1	Replace the Power P.C.B. Does operation return to normal.	YES	Power P.C.B.	7-11
				NO	Main P.C.B.	7-10

■ MAIN UNIT DIAGNOSIS (2/2)

Make sure that connecting cables, connectors and AC adapter are not loose or disconnected prior to testing.

No.	Symptom	Troubleshooting procedures No.		Result	Source of problem	Ref.Page
1	Unit does not start up when power is turned on. Unit hangs during operation.	1-1	Does operation return to normal when the unit is reset?	YES	Temporary timing error	———
				NO	Go to No. 1-2	———
		1-2	Is there a problem in the boot-up software?	YES	Software.	———
				NO	Go to No. 1-3	
		1-3	Replace the Power P.C.B.. Does operation return to normal?	YES	Power P.C.B.	7-11
				NO	Go to No. 1-4	———
		1-4	Replace the CPU P.C.B.. Does operation return to normal?	YES	CPU P.C.B.	7-10
				NO	Main P.C.B.	7-10
2	When a device is selected for "Boot Up Drive", the system boots from a different device.	2-1	Are there system files in the device selected?	YES	Go to No. 2-2	———
				NO	Improper setting	———
		2-2	Does the unit operate normally after replacing the problem device.	YES	Device for which the problem occurred	———
				NO	Main P.C.B.	7-10
3	Date or Time cannot be input. Date and Time does not change properly. Date and Time are not displayed.	3-1	Replace the Power P.C.B.. Does operation return to normal?	YES	Power P.C.B.	7-11
				NO	Main P.C.B.	7-10
4	Memory count is too large or too small.	4-1	Replace the Main P.C.B..		Main P.C.B.	7-10
5	No Sound Volume does not work.	5-1	Check software setting.	YES	Software setting	———
				NO	Go to No. 5-2.	———
		5-2	Replace the Speakers. Does operation return to normal?	YES	Speakers	7-15
				NO	Go to No. 5-3	———
		5-3	Replace the Power P.C.B.. Does operation return to normal?	YES	Power P.C.B.	7-11
				NO	Main P.C.B.	7-10
6	Battery pack will not charge. Battery pack overheats.	6-1	Replace the Battery Pack. Does operation return to normal?	YES	Battery Pack	7-3
				NO	Go to No. 6-2	———
		6-2	Replace the Power P.C.B.. Does operation return to normal?	YES	Power P.C.B.	7-11
				NO	Main P.C.B.	7-10

■ LCD DIAGNOSIS

Make sure that connecting cables, connectors and AC adapter are not loose or disconnected prior to testing.

No.	Symbol	Troubleshooting procedures No.	Troubleshooting procedures	Result	Source of problem	Ref.Page
1	No picture appears on the screen.	1-1	Does the LCD display properly after brightness level is adjusted?	YES	Brightness adjustment	———
				NO	Go to No. 1-2	———
		1-2	Replace the LCD or LCD FPC. Does operation return to normal?	YES	LCD or LCD FPC	7-12
				NO	Main P.C.B.	7-10
2	Display is too dark or too bright.	2-1	Does the LCD display properly after brightness level is adjusted?	YES	Brightness adjustment	———
				NO	Go to No. 2-2	———
		2-2	Replace the LCD or LCD FPC. Does operation return to normal?	YES	LCD or LCD FPC	7-12
				NO	Main P.C.B.	7-10
3	Display becomes vertical or horizontal line.	3-1	Replace the LCD. Does operation return to normal?	YES	LCD	7-12
				NO	Go to No. 3-2	———
	Some of the blocks on the screen do not display properly. A striped pattern is displayed. Lines and dots are omitted from the display. Dots appear. Display quality poor. (Fuzzy or slanted, etc.)	3-2	Replace the Main P.C.B.. Does operation return to normal?	YES	Main P.C.B.	7-10
				NO	LCD FPC	7-12
4	Backlight does not turn on.	4-1	Replace the backlight. Does operation return to normal?	YES	Backlight	7-13
				NO	Go to No. 4-2	———
		4-2	Replace the Inverter P.C.B.. Does operation return to normal?	YES	Inverter P.C.B.	7-12
				NO	Go to No. 4-3	———
		4-3	Replace the Main P.C.B.. Does operation return to normal?	YES	Main P.C.B.	7-10
				NO	Power P.C.B.	7-11
5	Character appearance is abnormal.	5-1	Replace the LCD. Does operation return to normal?	YES	LCD	7-12
				NO	Go to No. 5-2	———
	Graphics are not displayed, although other characters do appear. Graphics pattern does not display properly.	5-2	Replace the Main P.C.B.. Does operation return to normal?	YES	Main P.C.B.	7-10
				NO	LCD FPC	7-12

■ KEYBOARD, MOUSE or TOUCH PAD DIAGNOSIS

Make sure that connecting cables, connectors and AC adapter are not loose or disconnected prior to testing.

No.	Symptom	Troubleshooting procedures No.	Troubleshooting procedures	Result	Source of problem	Ref.Page
1	Key top cannot be pressed. Key top does not spring back after pressing.	1-1	Keyboard is broken.	——	Keyboard	7-15
2	Unit will not accept inputs from any key.	2-1	Is the keyboard connector properly connected?	YES	Go to No. 2-2	——
				NO	Keyboard connection	——
		2-2	Replace the keyboard and see if inputting from the keyboard functions normally?	YES	Keyboard	7-15
				NO	Go to No. 2-3	——
		2-3	Replace the Main P.C.B. and see if inputting from the keyboard functions normally.	YES	Main P.C.B.	7-10
				NO	LCD FPC	7-12
3	Input character is displayed as garbage.	3-1	Is the keyboard setting in the operating system correct?	YES	Go to No. 3-2	——
				NO	Software setting	——
		3-2	Replace the keyboard and see if inputting from the keyboard functions normally.	YES	Keyboard	7-15
				NO	Go to No. 3-3	——
		3-3	Replace the Main P.C.B. and see if inputting from the keyboard functions normally.	YES	Main P.C.B.	7-10
				NO	Power P.C.B.	7-11
4	keyboard unit does not open.	4-1	Replace the gears, pulley or belt in Keyboard Pop Up unit. Does operation return to normal?	YES	Gears or pulley or belt	7-16
				NO	Go to No. 4-2	——
		4-2	Replace the motor or Angle Sensor FPC in Keyboard Pop Up unit Does operation return to normal?	YES	Motor or Angle Sensor FPC	7-16
				NO	Main P.C.B.	7-10
5	Inputs from the mouse are not accepted properly.	5-1	Is the mouse properly connected?	YES	Go to No. 5-2	——
				NO	Mouse connection	——
		5-2	Replace the mouse. Does operation return to normal?	YES	Mouse	——
				NO	Main P.C.B.	7-10
6	Inputs from the TOUCH PAD are not accepted properly.	6-1	Is the TOUCH PAD unit properly connected?	YES	TOUCH PAD connection	7-15
				NO	Go to No. 6-2	——
		6-2	Replace the TOUCH PAD or TOUCH PAD FPC. Does operation return to normal?	YES	TOUCH PAD or TOUCH PAD FPC	7-15
				NO	Main P.C.B.	7-10

FDD DIAGNOSIS

Make sure that connecting cables, connectors and AC adapter are not loose or disconnected prior to testing.

No.	Symptom	Troubleshooting procedures No.	Troubleshooting procedures	Result	Source of problem	Ref.Page
1	FDD indicator is not displayed.	1-1	Replace the FDD or FDD FPC. Does operation return to normal?	YES	FDD or FDD FPC	7-2,7-14
				NO	Main P.C.B.	7-10
2	Cannot insert floppy disk. Cannot remove floppy disk.	2-1	Is the floppy disk warped or bent, or labels interfering?	YES	Floppy disk	———
				NO	FDD	7-2,7-14
3	Does not boot from FDD.	3-1	Are there system files on the media?	YES	Main P.C.B.	7-10
				NO	Software	———
4	Cannot read from floppy disk.	4-1	Is the floppy disk format correct for the operating system currently being used?	YES	Go to No. 4-2	———
				NO	Floppy disk format	———
	Cannot write to floppy disk.	4-2	Does this occur for a specific floppy disk?	YES	Floppy disk	———
				NO	Go to No. 4-3	———
		4-3	Try cleaning the disk heads. Does this fix the problem?	YES	Heads were dirty	———
				NO	Go to No. 4-4	———
		4-4	Replace the FDD. Does operation return to normal?	YES	FDD	7-2,7-14
				NO	Main P.C.B.	7-10
5	Floppy disk is scratched or otherwise damaged.	5-1	Try cleaning the disk heads. Does this fix the problem?	YES	Heads were dirty	———
				NO	FDD	7-2,7-14
6	Content of floppy disk is destroyed.	6-1	Was the eject button pressed while the system was accessing the disk?	YES	Operating mistake	———
				NO	Go to No. 6-2	———
		6-2	Replace the FDD. Does operation return to normal?	YES	FDD	7-2,7-14
				NO	Main P.C.B.	7-10
7	Damage to contents written to floppy disk. Damage to contents read from floppy disk.	7-1	Does this occur for a specific floppy disk?	YES	Floppy disk	———
				NO	Go to No. 7-2	———
		7-2	Replace the FDD. Does operation return to normal?	YES	FDD	7-2,7-14
				NO	Main P.C.B.	7-10
8	Abnormal sound	8-1	Does it sound like the head is moving?	YES	Normal	———
				NO	FDD	7-2,7-14
9	Diagnostic Test reports problem in FDC.	9-1	Replace the FDD. Does operation return to normal?	YES	FDD	7-2,7-14
				NO	Main P.C.B.	7-10

■ HDD DIAGNOSIS

Make sure that connecting cables, connectors and AC adapter are not loose or disconnected prior to testing.

No.	Symptom	Troubleshooting procedures No.	Troubleshooting procedures	Result	Source of problem	Ref.Page
1	Does not boot from HDD.	1-1	Has the HDD been partitioned?	YES	Go to No. 1-2	———
				NO	Improper setting	———
		1-2	Are there system files on the HDD?	YES	Go to No. 1-3	———
				NO	Software on the HDD	———
		1-3	Replace the HDD or HDD FPC. Does operation return to normal?	YES	HDD or HDD FPC	7-2,7-14
				NO	Main P.C.B.	7-10
2	Cannot read from HDD.	2-1	Has the HDD been formatted?	YES	Go to No. 2-2	———
				NO	HDD format	———
	Cannot write to HDD.	2-2	Replace the HDD or HDD FPC. Does operation return to normal?	YES	HDD or HDD FPC	7-2,7-14
				NO	Main P.C.B.	7-10
3	Damage to data written to HDD. Damage to data read from HDD. HDD contents are destroyed	3-1	Replace the HDD. Does operation return to normal?	YES	HDD	7-2,7-14
				NO	Main P.C.B.	7-10
4	Diagnostic Test reports problem in HDC or HDD.	4-1	Replace the HDD.	——	HDD	7-2,7-14
5	HDD indicator is not displayed.	5-1	Replace the HDD or HDD FPC. Does operation return to normal?	YES	HDD or HDD FPC	7-2,7-14
				NO	Main P.C.B.	7-10
6	Abnormal sound	6-1	Replace the HDD.	——	HDD	7-2,7-14

■ SERIAL COMMUNICATION DIAGNOSIS

Make sure that connecting cables, connectors and AC adapter are not loose or disconnected prior to testing.

No.	Symptom	Troubleshooting Procedures No.		Result	Source of problem	Ref.Page
1	Data cannot be sent or received.	1-1	Is the COM port properly set?	YES	Go to No. 1-2	———
				NO	Improper setting	———
		1-2	Is the same transmission protocol set for both the sending and receiving units?	YES	Go to No. 1-3	———
				NO	Improper setting	———
		1-3	Does the RS-232C on the Main P.C.B. operate normally under a loopback test?	YES	Check the interface with the other computer	———
				NO	Main P.C.B.	7-10
2	Unit will not communicate with another computer when connected directly.	2-1	Is the connection cable a dedicated cross-patched cable?	YES	Go to No. 2-2	———
				NO	Connection cable	———
		2-2	Is the same transmission protocol set for both the sending and receiving units?	YES	Go to No. 2-3	———
				NO	Improper setting	———
		2-3	Does the RS-232C on the Main P.C.B. operate normally under a reverse test?	YES	Check the interface with the other computer	———
				NO	Main P.C.B.	7-10
3	Unit will not communicate with modem.	3-1	Is the COM port properly set?	YES	Go to No. 3-2	———
				NO	Improper setting	———
		3-2	Is the transmission protocol correct?	YES	Go to No. 3-3	———
				NO	Improper setting	———
		3-3	Does the modem operate normally under a local analog loopback test?	YES	Line	———
				NO	Go to No. 3-4	———
		3-4	Does the RS-232C on the main board operate normally under a loopback test?	YES	Modem	———
				NO	Main P.C.B.	7-10
4	Diagnostic Test reports problem in serial port.	4-1	Is the loop back device properly attached to the connector (for an external loop back)?.	YES	Main P.C.B.	7-10
				NO	Improper setting	———

■ PRINTING DIAGNOSIS

Make sure that connecting cables, connectors and AC adapter are not loose or disconnected prior to testing.

No.	Symptom	Troubleshooting procedures No.	Troubleshooting procedures	Result	Source of problem	Ref.Page
1	Data does not print from the printer.	1-1	Does the printer pass its self-printing test?	YES	Main P.C.B.	7-10
				NO	Printer	———
2	Data prints out incorrectly.	2-1	Does the printer pass its self-printing test?	YES	Go to No. 2-2	———
				NO	Printer	———
		2-2	Is the Parallel Port (Data Direction) setting correct?	YES	Main P.C.B.	7-10
				NO	Improper setting	———
3	The unit hangs after outputting data from the printer.	3-1	Replace the Main P.C.B.. Does operation return to normal?	YES	Main P.C.B.	7-10
				NO	Printer	———
4	Print area is out of line.	4-1	Does the printer pass its self-printing test?	YES	Main P.C.B.	7-10
				NO	Printer	———
5	Data is printed all on one line. (Carriage return does not work.)	4-2	Does the printer pass its self-printing test?	YES	Main P.C.B.	7-10
				NO	Printer	———

■ PD Drive DIAGNOSIS

Make sure that connecting cables, connectors and AC adapter are not loose or disconnected prior to testing.

No.	Symptom	Troubleshooting procedures No.	Troubleshooting procedures	Result	Source of problem	Ref.Page
1	PD indicator is not displayed.	1-1	Replace the PD Drive. Does operation return to normal?	YES	PD Drive	7-11
				NO	Main P.C.B.	7-10
2	Cannot read from PD disk. Cannot write to PD disk.	2-1	Replace the media. Does operation return to normal?	YES	Media	———
				NO	Go to No. 2-2.	———
		2-2	Replace the PD drive. Does operation return to normal?	YES	PD drive	7-11
				NO	Main P.C.B.	7-10
3	Tray does not open.	3-1	Replace the PD drive. Does operation return to normal?	YES	PD drive	7-11
				NO	Main P.C.B.	7-10
4	Abnormal sound	4-1	Replace the Media. Does operation return to normal?	YES	Media	———
				NO	PD drive	7-11

■ PC CARD DIAGNOSIS

Make sure that connecting cables, connectors and AC adapter are not loose or disconnected prior to testing.

No.	Symptom	Troubleshooting procedures No.		Result	Source of problem	Ref.Page
1	Cannot insert PC CARD. Cannot remove PC CARD.	1-1	Is the PC CARD deformed?	YES	PC CARD	7-3
				NO	PC CARD Slot	7-9
2	PC CARD does not work properly.	2-1	Is a correct driver used?	YES	Go to No. 2-2.	———
				NO	Driver software	———
		2-2	Is there a conflict in configuration? (I/O Address, IRQ)	YES	Configuration	———
				NO	Go to No. 2-3.	———
		2-3	Does Diagnostic Test report problem in PC CARD controller?	YES	Main P.C.B.	7-10
				NO	PC CARD	7-3

■ STATUS LCD DIAGNOSIS

Make sure that connecting cables, connectors and AC adapter are not loose or disconnected prior to testing.

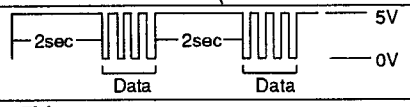
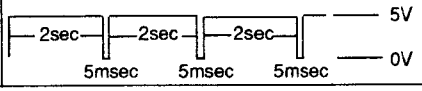
No.	Symptom	Troubleshooting procedures No.		Result	Source of problem	Ref.Page
1	Indicator is not displayed properly.	1-1	Replace the STATUS LCD. Does operation return to normal?	YES	STATUS LCD.	7-15
				NO	Main P.C.B. or LCD FPC.	7-10,7-12

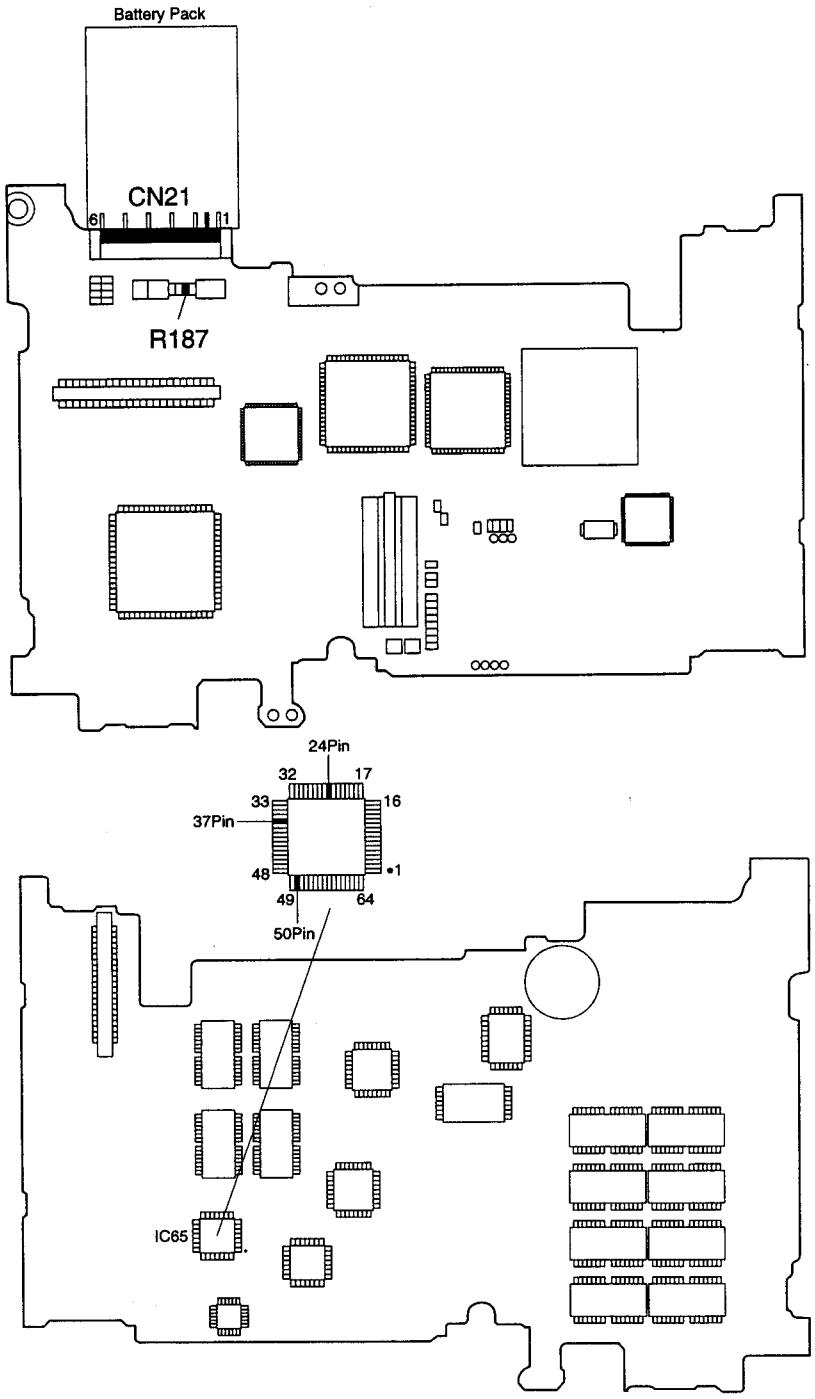
■ INFRARED COMMUNICATION PORT DIAGNOSIS

Make sure that connecting cables, connectors and AC adapter are not loose or disconnected prior to testing.

No.	Symptom	Troubleshooting procedures No.		Result	Source of problem	Ref.Page
1	Data cannot be sent or received.	1-1	Is the Infrared Communication Port enabled in Setup?	YES	Go to No. 1-2.	———
				NO	Improper setting.	———
		1-2	Is the same transmission protocol set for both the sending and receiving units?	YES	Go to No. 1-3.	———
				NO	Improper setting.	———
		1-3	Does Diagnostic Test report problem?	YES	Main P.C.B.	7-10
				NO	Power P.C.B.	7-11

■ Battery Signal Check Point

Error Code No.	Check Point	Normal Result
E6(6-1), ED(13-1), ED(13-1)	CN21 1Pin (CHARGE)◄——►6Pin (GND)	120mA~ 3.0A (Unit is OFF) 120mA~ 800mA (Unit is ON) 120mA~ 270mA (Remove the R178)
E7(7-2), EB(11-2)	CN21 3Pin (BATTRXD)◄——►6Pin (GND)	
E7(7-1), EB(11-1)	CN21 2Pin (BATTCS)◄——►6Pin (GND)	5V
E9(9-2)	IC65 50Pin (BVOLTNG)◄——►24Pin (GND)	0V
E9(9-3), EC(12-2)	CN21 1Pin (CHARGE)◄——►6Pin (GND)	——
	IC65 37Pin (CHGDOWN)◄——►24Pin (GND)	



6. Diagnostic Test

6.1 Outline of Diagnostic Test

Diagnostic Menu (Main Menu)

This menu lists the available choice of the diagnostic program. This menu lists the various components of your computer system that can be tested using the diagnostic program. Each menu item is described below. The menu you obtain may differ slightly depending on the devices installed in your computer system.

• Main test items

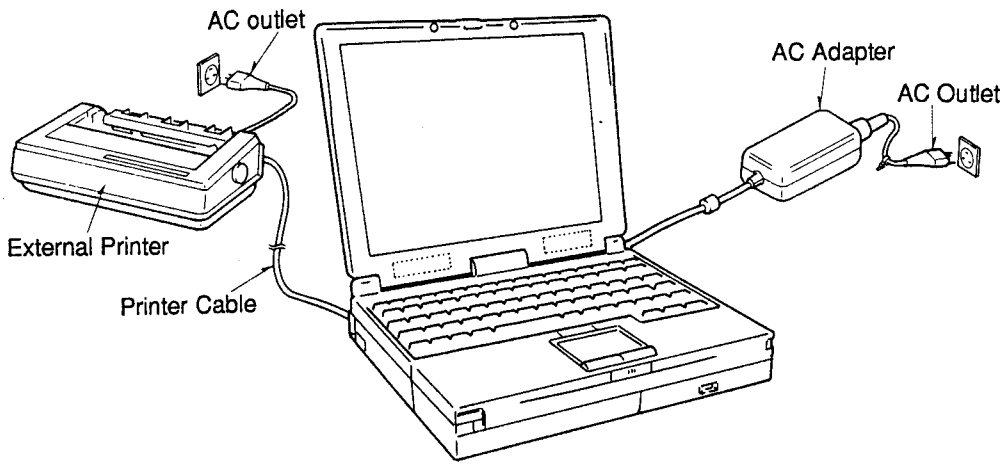
TEST ALL DEVICES	Each device is checked in sequence. Notice that this item is automatically programmed as the default choice. Press the [Enter] key to begin the test.
TEST AUTOMATICALLY	All the devices will be tested repeatedly without further input from user.
CHANGE MENU	Allows user to add or delete items from the testing menu for the TEST ALL DEVICES or TEST AUTOMATICALLY selection.
EXIT	If you decide that you do not wish to proceed with the diagnostic testing, select this item to reboot.
MAIN BOARD	Tests the main board.
***KB RANDOM ACCESS MEMORY	Tests the base memory and extended memory. (The number of KB will change depending on the configuration of your system.)
KEYBOARD	Tests the keyboard.
TOUCH PAD/MOUSE	Tests the touch pad and external mouse.
BATTERY PACK	Tests the battery pack.
VIDEO	Tests the LCD, external display and video controller.
1 HARD DISK DRIVE(S)	Tests the hard disk drive connected to the system.
1 FLOPPY DISK DRIVE(S)	Tests the floppy disk drive connected to the system. Prepare a 3.5" 2DD floppy disk and 3.5" 2HD floppy disk. This test will erase the data on the floppy disk.
1 PARALLEL PORT(S)	Tests the parallel port and external printer connected to the system. Prepare a printer and loopback plug for the parallel port.
1 SERIAL PORT(S)	Tests the RS-232C serial port connected to the system. Prepare a loopback plug for the serial port.
SCSI	Tests the SCSI controller and PD drive. Prepare a PD cartridge and the "Firstaid CD". This test will erase the data on the PD cartridge.
SOUND	Tests the FM sound source and the sound generator register.
PC CARD CONTROLLER	Tests the PC card controller.
STATUS LCD	Tests the status LCD.
INFRARED COMMUNICATION PORT	Tests the infrared communication port.

6.2 Diagnostic Test Procedure

■1. Equipment

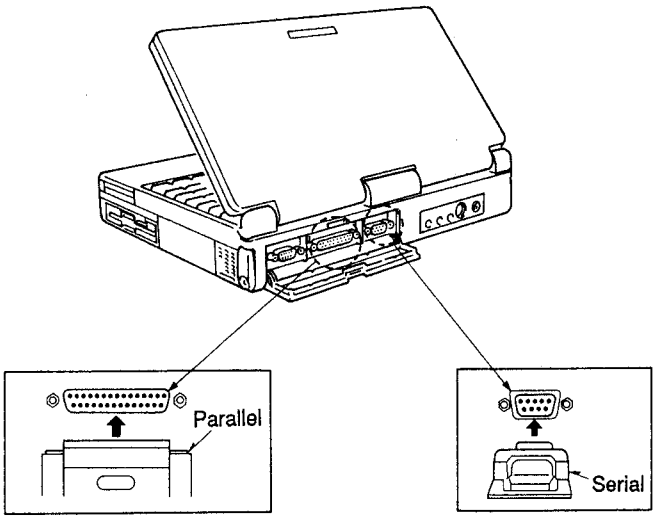
(1) Test Computer..... 1 unit
(2) AC Adapter..... 1 pc.
(3) External Printer..... 1 unit
(4) Loopback Plug (Parallel Port Test) [P/N: DFWV95C0081].....1 pc.
(5) Loopback Plug (Serial Port Test for RS323) [P/N: DFWV95C0067].....1 pc.
(6) Firstaid FD..... 1 pc.
(7) Firstaid CD..... 1 pc.
(8) PD disk..... 1 pc.

■2. Equipment Connection



■3. Preparation

(1) Connect the computer as shown in the figure above.
(2) The System Setup should be set to the factory setting values by executing the "SETUP62 /F" command. If not, the messages and items of the diagnostic test may not be displayed properly on the LCD.
(3) The serial port must be enabled in the SETUP62 program in order to execute the "1st SERIAL PORT" test.
(4) Connect the serial loopback plug as shown in the figure below.
(5) In order to test the parallel port with Loopback Plug, disconnect the printer cable and connect the parallel loopback plug **with Power OFF** as shown in figure below.



■4. NOTICE

When "Enter password" is displayed, use "Password Skipping Plug" in order to skip the user password.
To skip the user-registered password, connect "Password Skipping Plug" to Parallel Port then power ON the computer.

The wiring of the plug is described below.

Connect pins 2, 5, 6, 8, 13, 15 and 25. Also connect pins 11 and 24.

CAUTION

The plug described above must be used for servicing purpose only.
Do not use it for other than the above purpose and ensure that it remains confidential.
Using the plug enables the user to skip the previous password and disable the password.

■5. Test Procedure

Insert the "Firstaid FD" into the floppy disk drive and restart the computer.

```
1 Boot
2 Restore HDD to Factory defaut
```

Press (1) and (Enter) keys.

```
A:\DOS>
```

Input the following;

Press (D)(I)(A)(G)(6)(2) and (Enter) keys.

```
DIAGNOSTIC MENU (V*.*L**)
      1. TEST ALL DEVICES      (□DEVICES)
      2. TEST AUTOMATICALLY (■DEVICES)
      3. CHANGE MENU
      4. EXIT
   ■  5. MAIN BOARD
   ■  6. xxxxxKB RANDOM ACCESS MEMORY
   ■  7. KEYBOARD
      8. TOUCH PAD/MOUSE
      9. BATTERY PACK
   ■ 10. VIDEO
   ■ 11. 1 HARD DISK DRIVE(S)
   ■ 12. 1 FLOPPY DISK DRIVE(S)
     13. 1 PARALLEL PORT(S)
   ■ 14. 1 SERIAL PORT(S)
   ■ 15. SCSI
     16. SOUND
   ■ 17. PCCARD CONTROLLER
     18. STATUS LCD
   ■ 19. INFRARED COMMUNICATION PORT

SELECT MENU : _
```

(Fig, 1)

Select test item, Press number and Enter keys.

1) MAIN BOARD TEST

Fig.1 displayed.
Press (5) and (Enter) keys.

(Normal Message) : Test done ! ! Hit any key when ready._
When an error message is displayed, refer to [6.3 Error Message].

2) xxxxxKB RANDOM ACCESS MEMORY TEST

Fig.1 displayed.
Press (6) and (Enter) Keys.

● Display

```
BASE RAM TEST
   CURRENT BASE RAM SIZE = 640KB
   640KB  OK
EXTENDED RAM TEST
  CURRENT EXTENDED RAM SIZE = xxxxxKB
  xxxxxKB  OK
```

(Normal Message) : Test done ! ! Hit any key when ready._
When an error message is displayed, refer to [6.3 Error Message].

3) KEYBOARD TEST

Fig.1 displayed.
Press (7) and (Enter) keys. Fig.2 displayed.

● Display

```
  1. TEST ALL DEVICES      (□DEVICES)
  2. TEST AUTOMATICALLY (■DEVICES)
  3. CHANGE MENU
  4. EXIT
  5. PRESS KEY TEST
 ■6. SCAN CODE RETURN TEST
SELECT MENU : _
```

(Fig.2)

For 5. PRESS KEY TEST. (Fig.2)
Press (5) and (Enter) Keys. Fig.3 displayed.

● Display

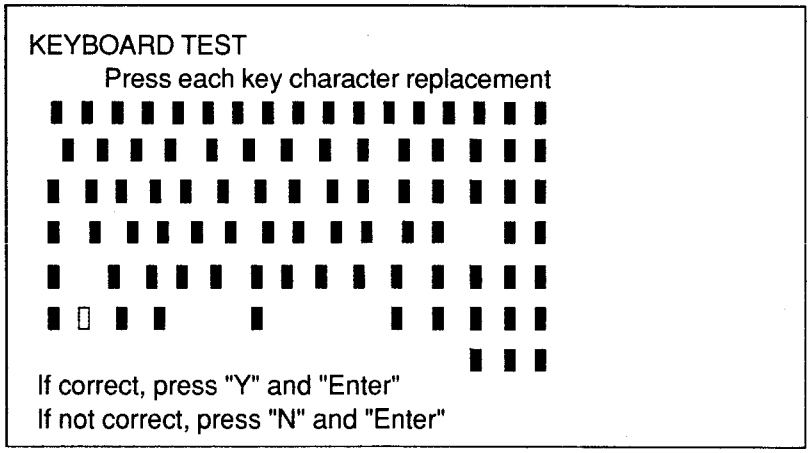
```
PRESS KEY TEST
      1. TEST ALL DEVICES      (□ DEVICES)
      2. TEST AUTOMATICALLY (■ DEVICES)
      3. CHANGE MENU
      4. EXIT
      5. U.S.A.
      6. U.K.
      7. SWEDEN
      8. JAPAN
      9. GERMANY
     10. FRANCE
     11. ITALY
     12. SPAIN
     13. SWISS  (Gr)
    SELECT MENU : _
```

(Fig.3)

For 5. U.S.A.. (Fig.3)

Press (5) * and (Enter) keys. *Note: Press appropriate number according to the keyboard layout.

● Display



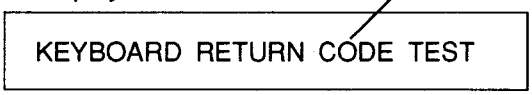
(Normal Message): Keyboard is OK Hit any key when ready._

When an error message is displayed, refer to [6.3 Error Message].

For 6. SCAN CODE RETURN TEST. (Fig.2)

Press (6) and (Enter) keys.

● Display



Immediately after this message is displayed, press the key of the test you would like to perform.
(The routine will terminate if no entry is pressed.)

Press any key.

(Normal message) : KEY Key has been hit or broken (F10)
SCAN code : xx

Test done ! ! Hit any key when ready._

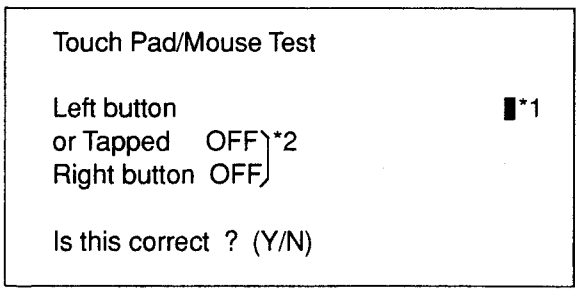
When an error message is displayed, refer to [6.3 Error Massage].

4) TOUCH PAD

Fig.1 displayed.

Press (8) and (Enter) keys.

● Display



*1 The cursor moves over the screen according to the movement of your finger tip over the work surface.

*2 Clicking the button or quickly tapping the pad twice quickly switches the display to "ON".

5) BATTERY PACK TEST

Fig.1 displayed.
Press (9) and (Enter) keys.

(Normal Message) : Test done ! ! Hit any key when ready._
When an error message is displayed, refer to [6.3 Error Message].

6) VIDEO TEST

Fig.1 displayed.
Press (10) and (Enter) keys. Fig.4 displayed.

● Display

```
  1. TEST ALL DEVICES      (□DEVICES)
  2. TEST AUTOMATICALLY    (■DEVICES)
  3. CHANGE MENU
  4. EXIT
■5. VIDEO CONTROLLER
■6. VGA COLOR MODE TEST
■7. VGA MONO MODE TEST
■8. S-VGA COLOR MODE TEST

SELECT MENU : _
```

*Use these tests to look at the screen and verify that the LCD screen is displaying properly.

(Fig.4)

For 5. VIDEO CONTROLLER. (Fig.4)
Press (5) and (Enter) keys.

(Normal Message) : Test done ! ! Hit any key when ready._
When an error message is displayed, refer to [6.3 Error Message].

For 6. VGA COLOR MODE TEST. (Fig.4)
Press (6) and (Enter) keys. Fig.5 displayed.

● Display

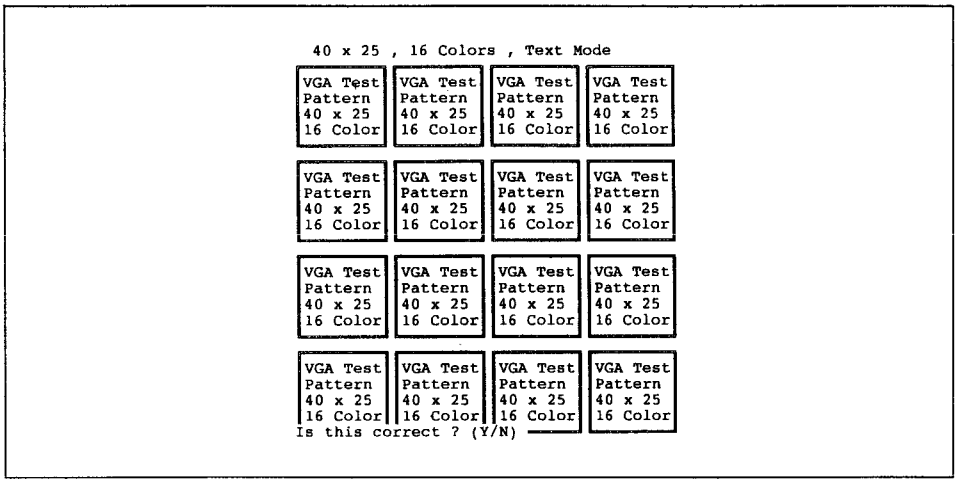
```
  1. TEST ALL DEVICES      (□DEVICES)
  2. TEST AUTOMATICALY     (■DEVICES)
  3. CHANGE MENU
  4. EXIT
■ 5. COLOR 40x25 TEXT MODE TEST
■ 6. COLOR 80x25 TEXT MODE TEST
■ 7. COLOR 640x200 GRAPHIC MODE TEST
■ 8. COLOR 640x350 GRAPHIC MODE TEST
■ 9. COLOR 640x480 GRAPHIC MODE TEST
■10. COLOR 320x200 256 COLOR TEST
■11. ASCII CODE PRINT
■12. PAGE CHANGE
■13. COLOR CHANGE GRAPHICS MODE
■14. CIRCLE & SQUARE PRINT

  SELECT MENU : _
```

(Fig.5)

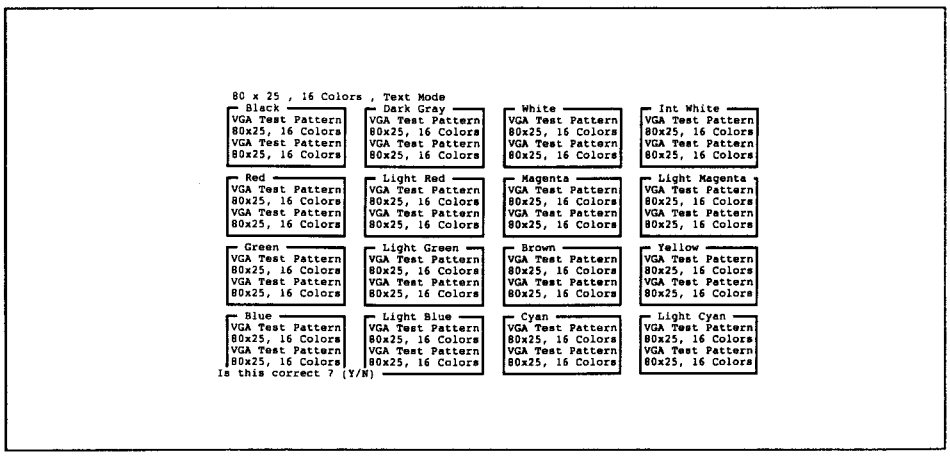
For 5. COLOR 40x25 TEXT MODE TEST. (Fig.5)
Press (5) and (Enter) keys.

● Display



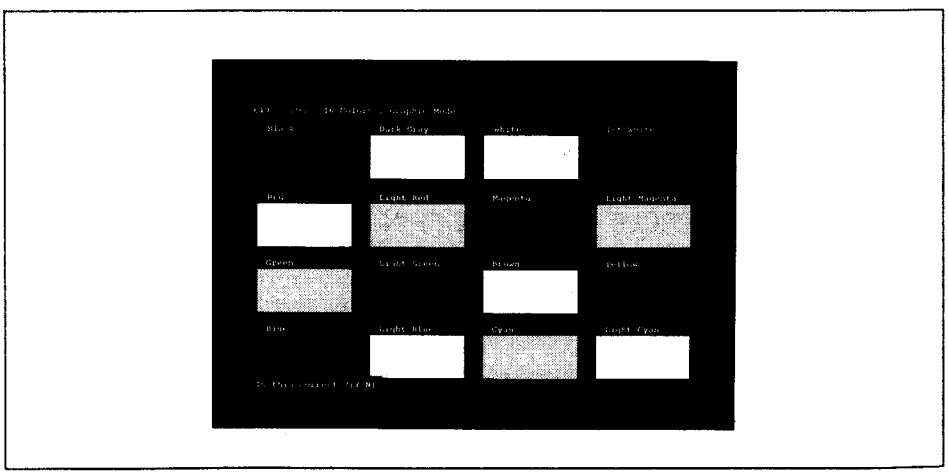
For 6. COLOR 80x25 TEXT MODE TEST. (Fig.5)
Press (6) and (Enter) keys.

● Display



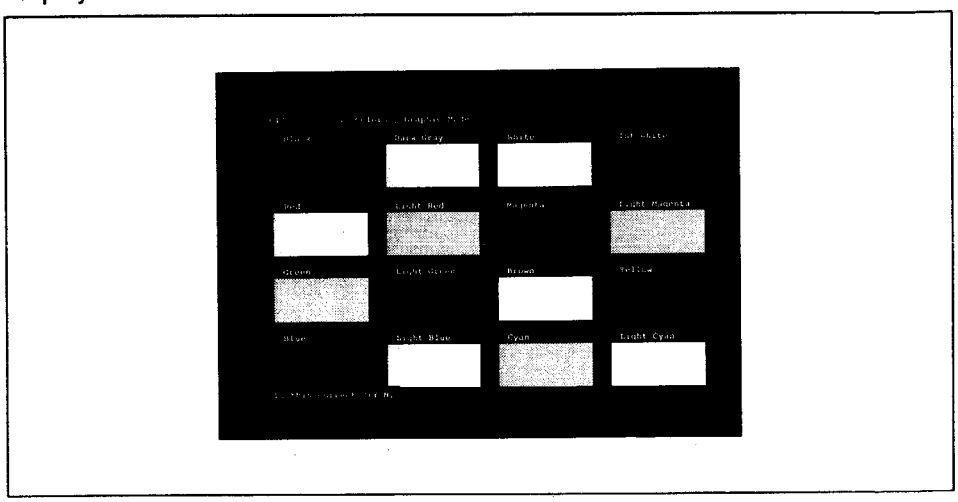
For 7. COLOR 640x200 GRAPHIC MODE TEST. (Fig.5)
Press (7) and (Enter) keys.

● Display



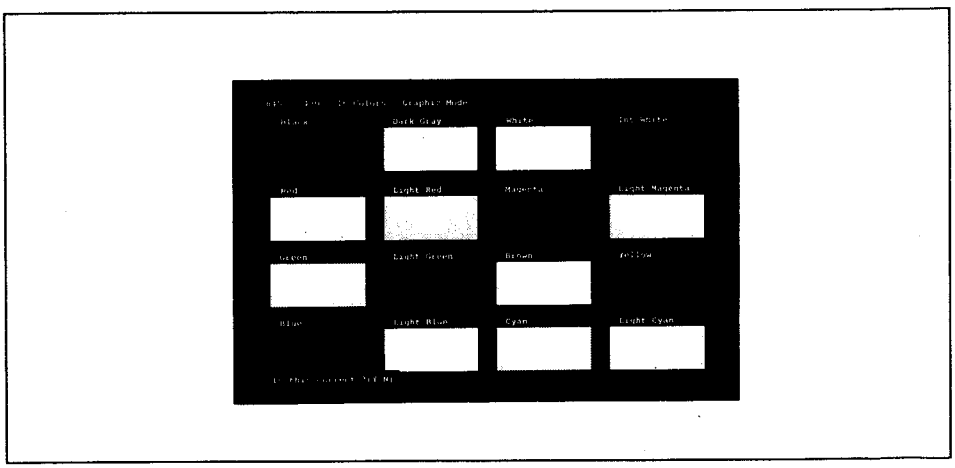
For 8. COLOR 640x350 GRAPHIC MODE TEST. (Fig.5)
Press (8) and (Enter) keys.

● Display



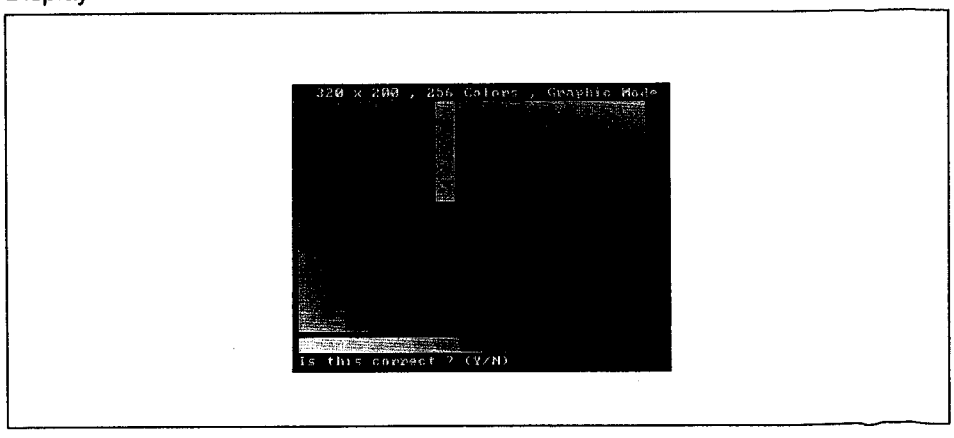
For 9. COLOR 640x480 GRAPHIC MODE TEST. (Fig.5)
Press (9) and (Enter) keys.

● Display



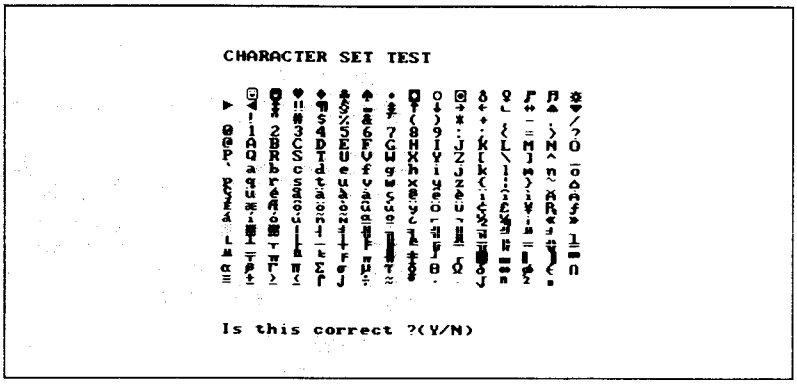
For 10. COLOR 320x200 256 COLOR TEST. (Fig.5)
Press (10) and (Enter) keys.

● Display



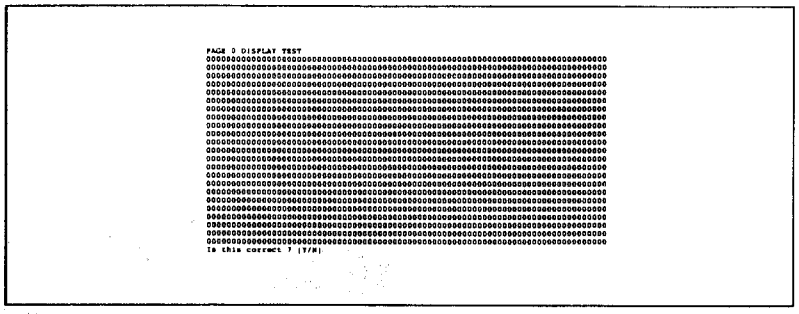
For 11. ASCII CODE PRINT. (Fig.5)
Press (11) and (Enter) keys.

● Display



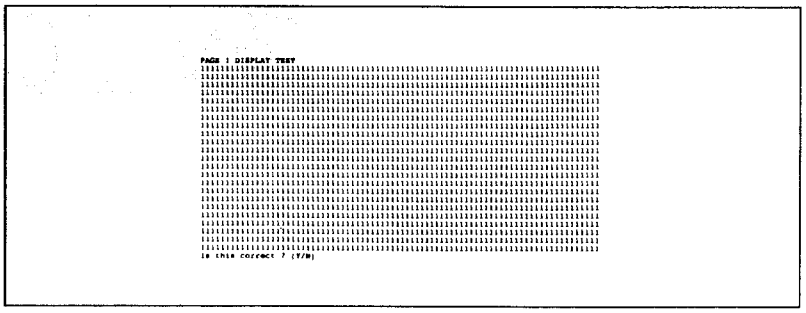
For 12. PAGE CHANGE. (Fig.5)
Press (12) and (Enter) keys.

● Display



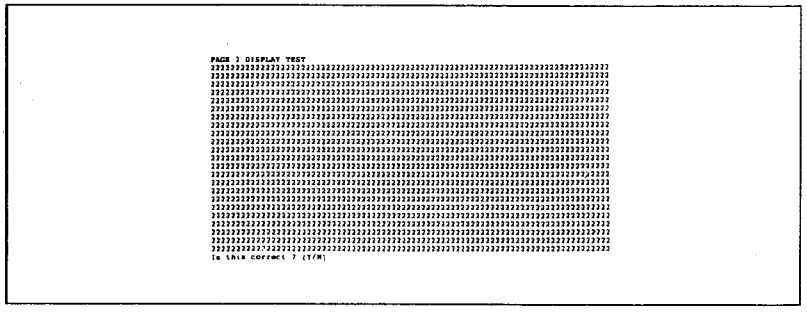
Press (Y) key.

● Display



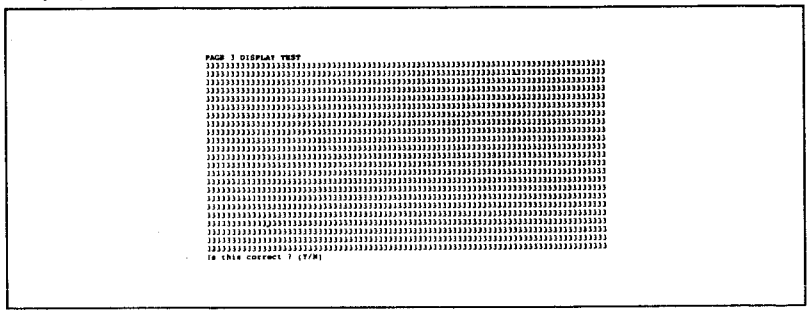
Press (Y) key.

● Display



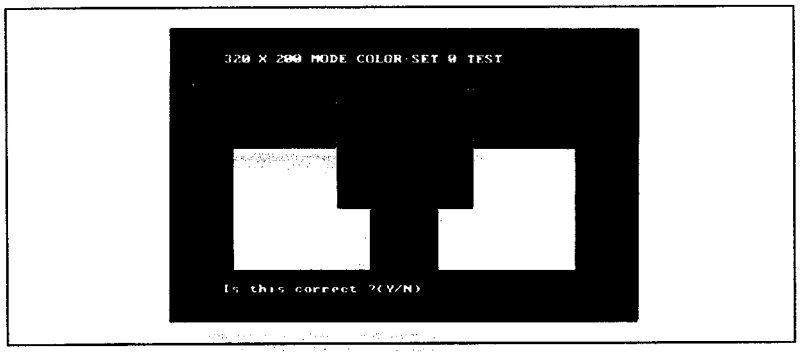
Press (Y) key.

● Display



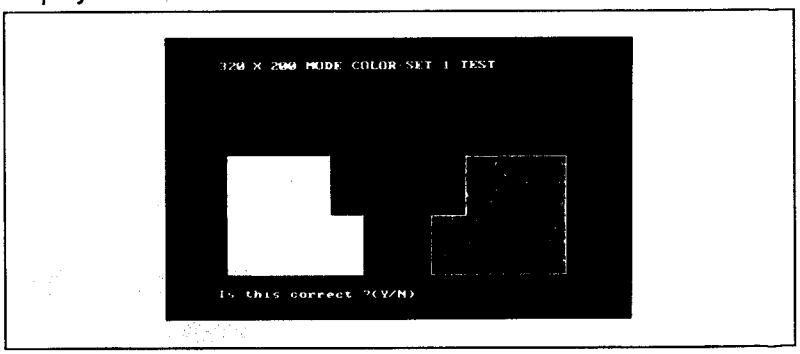
For 13. COLOR CHANGE GRAPHICS MODE. (Fig.5)
Press (13) and (Enter) keys.

● Display



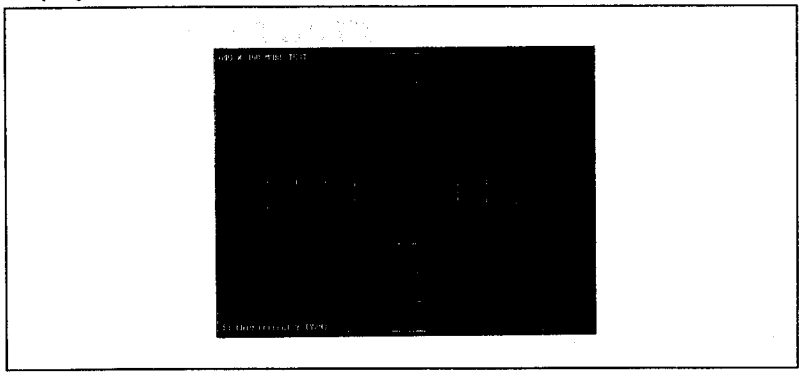
Press (Y) key.

● Display



For 14. CIRCLE & SQUARE PRINT. (Fig.5)
Press (14) and (Enter) keys.

● Display



For 6. VGA MONO MODE TEST. (Fig.4)
Press (7) and (Enter) keys. Fig.6 displayed.

● Display

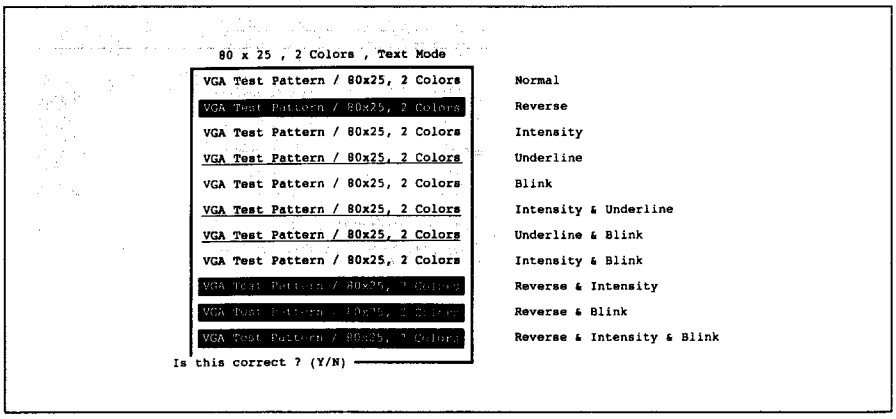
```
1. TEST ALL DEVICES        (□ DEVICE)
2. TEST AUTOMATICALLY      (■ DEVICE)
3. CHANGE MENU
4. EXIT
■ 5. MONO 80 x 25 TEST MODE TEST
■ 6. MONO 640 x 350 GRAPHIC MODE TEST

SELECT MENU : _
```

(Fig.6)

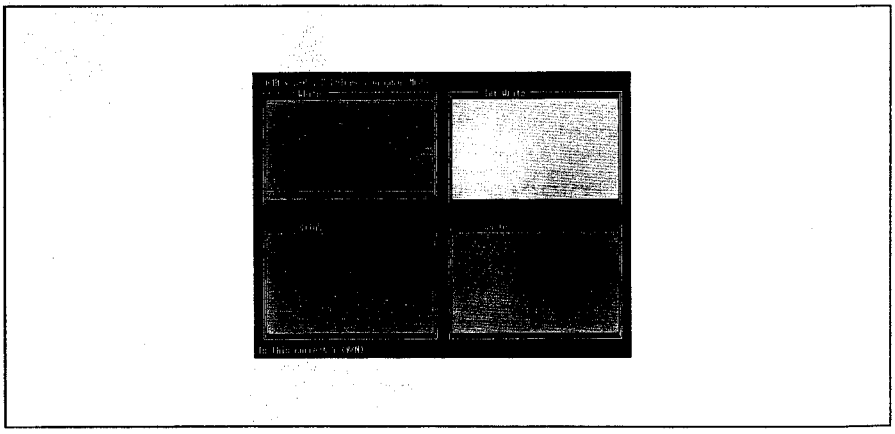
For 5. MONO 80 x 25 TEST MODE TEST. (Fig.6)
Press (5) and (Enter) keys.

● Display



For 6. MONO 640 x 350 GRAPHIC MODE TEST. (Fig.6)
Press (6) and (Enter) keys.

● Display



For 8. S-VGA COLOR MODE TEST. (Fig.4)
Press (8) and (Enter) keys. Fig.7 displayed.

● Display

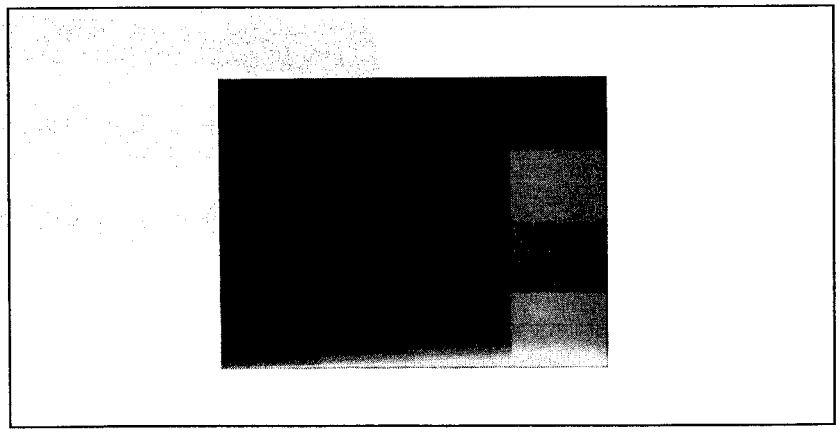
```
  1. TEST ALL DEVICES        (□ DEVICE)
  2. TEST AUTOMATICALLY      (■ DEVICE)
  3. CHANGE MENU
  4. EXIT
■ 5. 800 x 600    16 COLOR TEST
■ 6. 1024 x 768   16 COLOR TEST
■ 7. 640 x 480   256 COLOR TEST
■ 8. 800 x 600   256 COLOR TEST
■ 9. 1024 x 768  256 COLOR TEST
■ 10. 640 x 480  64k COLOR TEST
■ 11. 800 x 600  64k COLOR TEST
■ 12. 1024 x 768 64k COLOR TEST

 SELECT : _
```

(Fig.7)

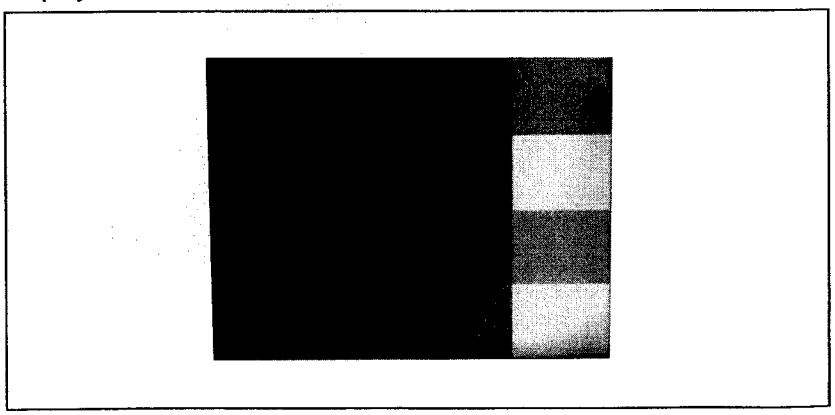
For 5. 800 x 600 16 COLOR TEST. (Fig.7)
Press (5) and (Enter) keys.

● Display



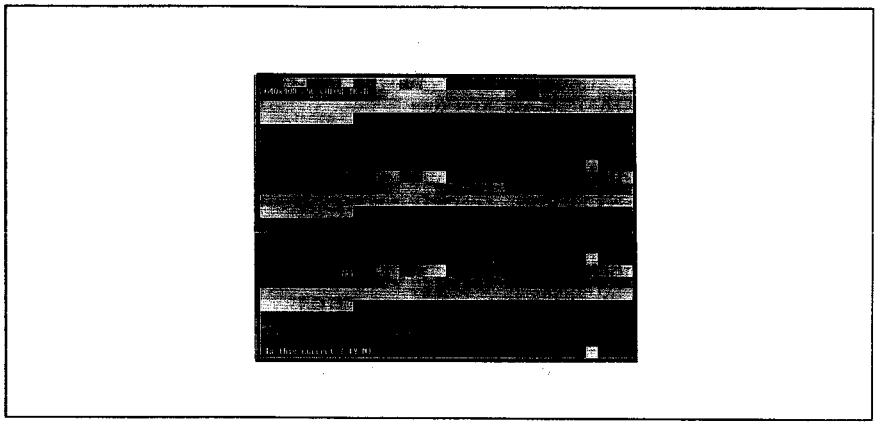
For 6. 1024 x 768 16 COLOR TEST. (Fig.7)
Press (6) and (Enter) keys.

● Display



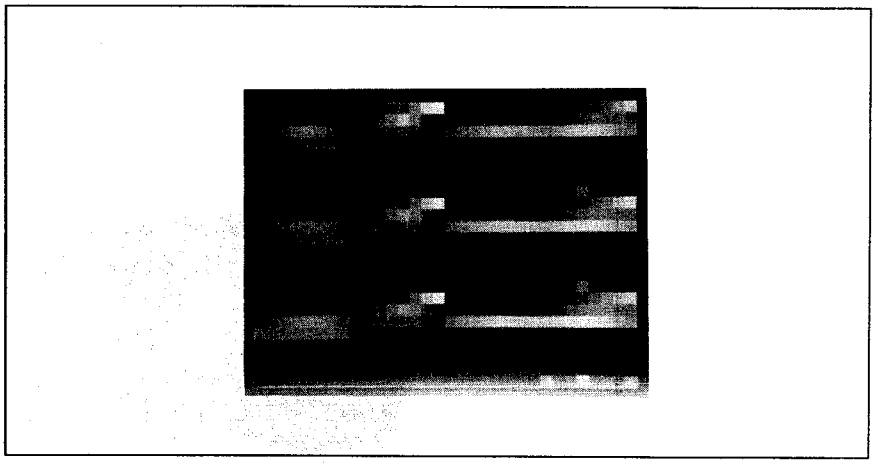
For 7. 640 x 480 256 COLOR TEST. (Fig.7)
Press (7) and (Enter) keys.

● Display



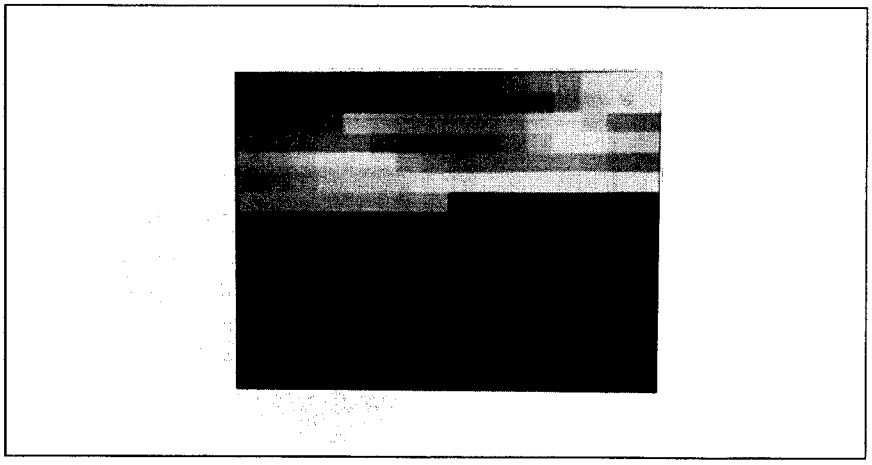
For 8. 800 x 600 256 COLOR TEST. (Fig.7)
Press (8) and (Enter) keys.

● Display



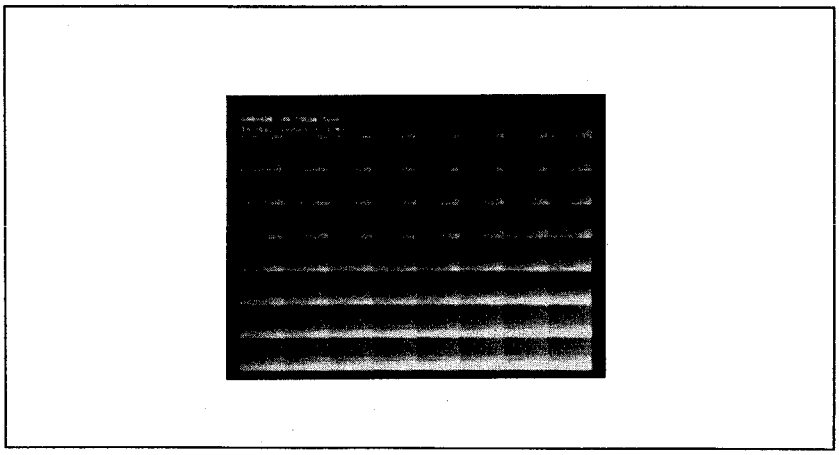
For 9. 1024 x 768 256 COLOR TEST. (Fig.7)
Press (9) and (Enter) keys.

● Display



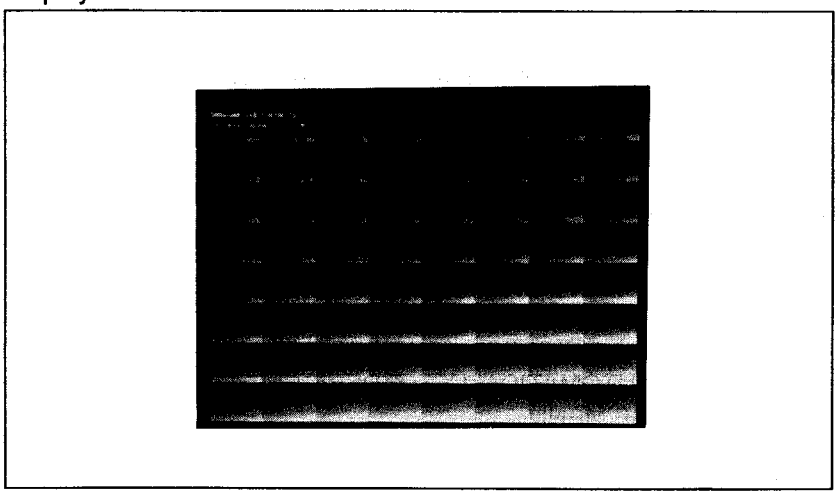
For 10. 640 x 480 64K COLOR TEST. (Fig.7)
Press (10) and (Enter) keys.

● Display



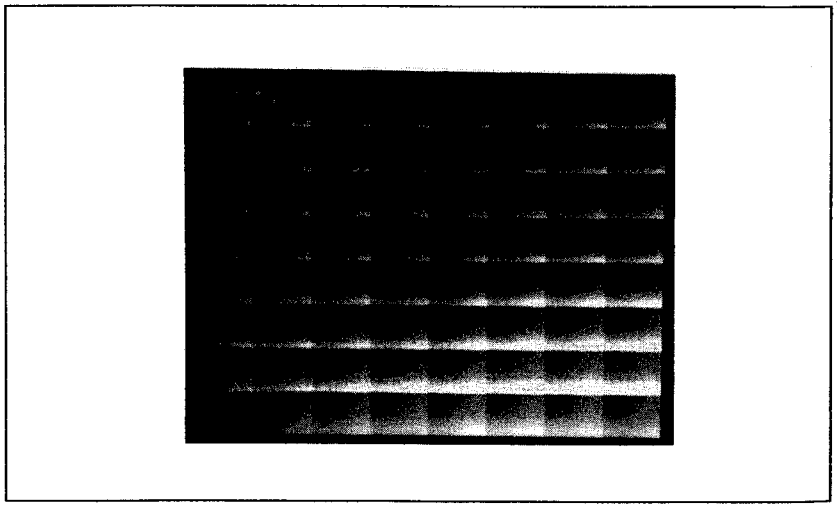
For 11. 800 x 600 64K COLOR TEST. (Fig.7)
Press (11) and (Enter) keys.

● Display



For 12. 1024 x 768 64K COLOR TEST. (Fig.7)
Press (12) and (Enter) keys.

● Display



7) 1 HARD DISK DRIVE(S) TEST

Fig.1 displayed.
Press (11) and (Enter) keys. Fig.8 displayed.

● Display

```
1st HARD DISK DRIVE(S)
      1. TEST ALL DEVICES      (□DEVICES)
      2. TEST AUTOMATICALLY    (■DEVICES)
      3. CHANGE MENU
      4. EXIT
   ■ 5. HARD DISK CONTROLLER TEST
   ■ 6. 1st HARD DISK DRIVE TEST

   SELECT : _
```

(Fig.8)

For 5. HARD DISK CONTROLLER TEST. (Fig.8)
Press (5) and (Enter) keys.

● Display

```
HARD DISK CONTROLLER TEST
```

(Normal Message) : Test done ! ! Hit any key when ready._
When an error message is displayed, refer to [6.3 Error Message].

For 6. 1st HARD DISK DRIVE TEST. (Fig.8)
Press (6) and (Enter) keys. Fig.9 displayed.

● Display

```
      1. TEST ALL DEVICES      (□DEVICES)
      2. TEST AUTOMATICALLY    (■DEVICES)
      3. CHANGE MENU
      4. EXIT
   ■ 5. HDD-DRIVE TEST
      6. HDD-READ/WRITE TEST
   ■ 7. HDD-SEQUENTIAL SEEK TEST
   ■ 8. HDD-RANDOM SEEK TEST

SELECT : _
```

(Fig.9)

For 5. HDD-DRIVE TEST. (Fig.9)
Press (5) and (Enter) keys.

● Display

```
1st HDD-DRIVE TEST
Count value to get SEEK COMPLETE = 0
```

(Normal Message) : Test done ! ! Hit any key when ready._
When an error message is displayed, refer to [6.3 Error Message]

For 6. HDD-READ/WRITE TEST. (Fig.9)
Press (6) and (Enter) keys.

● Display

```
xxxxxxxxxxxxxxxxxxxxx Warning !!! xxxxxxxxxxxxxxxxxxxx
      Reserved cylinder for DIAGNOSTICS will lose its data.
      Reserved cylinder number = ***
xxxxxxxxxxxxxxxxxxxxx Warning !!! xxxxxxxxxxxxxxxxxxxx

Do you want to continue ? (Y/N)
```

Press (Y) key.

(Normal Message) : Test done ! ! Hit any key when ready._
When an error message is displayed, refer to [6.3 Error Message].

For 7. HDD-SEQUENTIAL SEEK TEST. (Fig.9)
Press (7) and (Enter) keys.

● Display

```
1st HDD-SEQUENTIAL SEEK TEST

Cylinder = xxx
```

The numbers indicated by xxx will vary depending on the type of HDD.

(Normal Message) : Test done ! ! Hit any key when ready._
When an error message is displayed, refer to [6.3 Error Message].

For 8. HDD-RANDOM SEEK TEST. (Fig.9)
Press (8) and (Enter) keys.

● Display

```
1st HDD-RANDOM SEEK TEST

Cylinder = xxx
```

The numbers indicated by xxx will vary depending on the type of HDD.

(Normal Message) : Test done ! ! Hit any key when ready._
When an error message is displayed, refer to [6.3 Error Message].

8) 1FLOPPY DISK DRIVE(S) TEST

Fig.1 displayed.
Press (12) and (Enter) keys. Fig.10 displayed.

● Display

```
1st FLOPPY DISK DRIVE
      1. TEST ALL DEVICES        (■DEVICES)
      2. TEST AUTOMATICALLY      (□DEVICES)
      3. CHANGE MENU
      4. EXIT
   ■  5. FLOPPY DISK CONTROLLER TEST
   ■  6. 1st FLOPPY DISK  DRIVE TEST

   SELECT : _
```

(Fig.10)

For 5. FLOPPY DISK CONTROLLER TEST. (Fig.10)
Press (5) and (Enter) keys.

● Display

```
FLOPPY DISK CONTROLLER TEST
```

(Normal Message) : Test done ! ! Hit any key when ready._
When an error message is displayed, refer to [6.3 Error Message].

For 6. 1st FLOPPY DISK DRIVE TEST. (Fig.10)
Press (6) and (Enter) keys. Fig.11 displayed.

● Display

```
   1. TEST ALL DEVICES        (□DEVICES)
   2. TEST AUTOMATICALLY      (■DEVICES)
   3. CHANGE MENU
   4. EXIT
■  5. 1.44 - FDD TEST
   6. 2DD - MEDIA IN 1.44 - FDD TEST
   7. 2HD - MEDIA (1440MB) IN 1.44 - FDD TEST
   8. 2HD - MEDIA (1230MB) IN 1.44 - FDD TEST
   9. 2HD - MEDIA (1200MB) IN 1.44 - FDD TEST

 SELECT MENU : _
```

(Fig.11)

For 5. 1.44 - FDD TEST. (Fig.11)
Press (5) and (Enter) keys.

(Normal Message) : Test done ! ! Hit any key when ready._
When an error message is displayed, refer to [6.3 Error Message].

For 6. 2DD - MEDIA IN 1.44 - FDD TEST. (Fig.11)
Press (6) and (Enter) keys.
NOTE) At this time insert a formattable floppy disk into the FDD.
(All data on the floppy disk will be erased.)

● Display

```
xxxxxxxxxxxxxxxxxxxxx Warning ! ! ! xxxxxxxxxxxxxxxxxxxx
      CONTENTS OF DISK WILL BE DESTROYED
xxxxxxxxxxxxxxxxxxxxx Warning ! ! ! xxxxxxxxxxxxxxxxxxxx

Insert scratch 2DD disk into 1st drive.
Hit any key when ready.<---------- Press a key to begin formatting.

Formatting.....

Read/Write test
Sequential seek test
Random  seek test
```

(Normal Message): Test done ! ! Hit any key when ready._
When an error message is displayed, refer to [6.3 Error Messages].

*Use the same procedure for 7,8,9. 2HD-MEDIA (1440MB,1230MB,1200MB) IN 1.44 - FDD TEST.

9) 1 PARALLEL PORT(S) TEST.

Fig.1 displayed.
Press (13) and (Enter) keys. Fig.12 displayed.

● Display

```
  1. TEST ALL DEVICES      (□DEVICES)
  2. TEST AUTOMATICALLY    (■DEVICES)
  3. CHANGE MENU
  4. EXIT
  5. PRINT OUT TEST
  6. EXTERNAL LOOPBACK TEST
SELECT : _
```

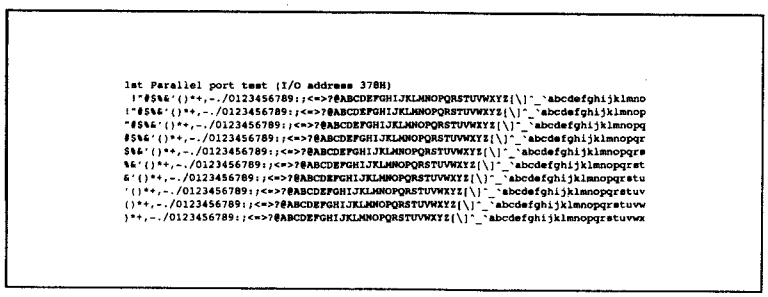
(Fig.12)

For 5. PRINT OUT TEST. (Fig.12)
Press (5) and (Enter) keys.

● Display

```
1st Parallel port test (I/O address xxxH)
Connect printer
Hit any key when ready._
```

(Normal Message): Sample characters will be printed to the printer.



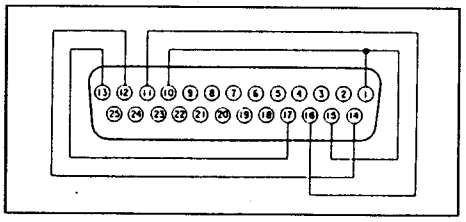
When an error message is displayed, refer to [6.3 Error Message].

For 6. EXTERNAL LOOPBACK TEST.
Press (6) and (Enter) keys.

Loopback Plug Wiring Information

- Display

Connect loopback plug Hit any key when ready._



1-10-15 Pin
11-16 Pin
12-14 Pin
13-17 Pin

"Connect loopback plug" will be displayed.
Connect the loopback plug to the parallel port.

(Normal Message): Test done ! ! Hit any key when ready._
When an error message is displayed, refer to [6.3 Error Message].

10) 1 SERIAL PORT(S)

Fig.1 displayed.
Press (14) and (Enter) keys. Fig.13 displayed.

- Display

1. TEST ALL DEVICES 2. TEST AUTOMATICALLY 3. CHANGE MENU 4. EXIT ■ 5. RS232C CONTROLLER REGISTER R/W TEST ■ 6. INTERNAL LOOPBACK TEST 7. EXTERNAL LOOPBACK TEST SELECT MENU : _

(Fig.13)

For 5. RS232C CONTROLLER REGISTER R/W TEST. (Fig.13)
Press (5) and (Enter) keys.

- Display

1st serial port test (I/O address xxxH)

(Normal Message): Test done ! ! Hit any key when ready._
When an error message is displayed, refer to [6.3 Error Message].

For 6. INTERNAL LOOPBACK TEST. (Fig.13)
Press (6) and (Enter) keys.

● Display

```
1st serial port test (I/O address xxxH)
```

(Normal Message): Test done ! ! Hit any key when ready._
When an error message is displayed, refer to [6.3 Error Message].

For 7. EXTERNAL LOOPBACK TEST. (Fig.13)
Press (7) and (Enter) keys.

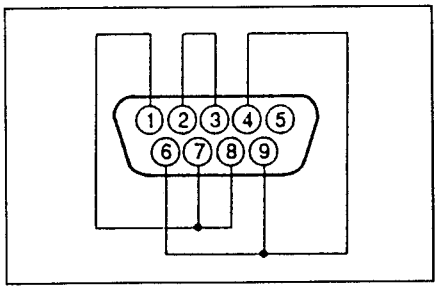
● Display

```
1st serial port test (I/O address xxxH)

Connect loopback plug. <---------- Connect the loopback plug
                                   to the serial port.
Hit any key when ready
```

(Normal Message): Test done ! ! Hit any key when ready
When an error message is displayed, refer to [6.3 Error Message].

Loopback Plug Wiring Information



11) SCSI TEST

Fig.1 displayed.
Press (15) and (Enter) keys. Fig.14 displayed.

● Display

```
  1. TEST ALL DEVICES      (□ DEVICES)
  2. TEST AUTOMATICALLY    (■ DEVICES)
  3. CHANGE MENU
  4. EXIT
■ 5. SCSI CONTROLLER TEST
  6. PD DRIVE TEST
  7. CD-ROM TEST

SELECT MENU : _
```

(Fig.14)

For 5. SCSI CONTROLLER TEST. (Fig.14)
Press (5) and (Enter) keys.

● Display

```
SCSI CONTROLLER TEST
ASPI: SCSI command is in progress
ASPI: SCSI command complete successfully
      HOST    STATUS = 00
      TARGET STATUS = 00
```

(Normal Message): Test done ! ! Hit any key when ready._
When an error message is displayed, refer to [6.3 Error Message].

For 6. PD DRIVE TEST. (Fig.14)
Insert the PD disk into the PD drive.
Press (6) and (Enter) keys.

● Display

```
PD DRIVE TEST
Number of HOST Adapter(s) = 1
Target ID of HOST Adapter = 7
SCSI Manager ID = "AMD ASPIMGR X.XX"
HOST Adapter ID = "AMD PC scsi PCI"

Searching PD Drive.
      SCSI ID = 0...Found PD Drive.

xxxxxxxxxxxxxxxxxxxxxWarning!!!xxxxxxxxxxxxxxxxxxxxxxx
      CONTENTS OF PD DISK WILL BE DESTROYED
xxxxxxxxxxxxxxxxxxxxxxWarning!!!xxxxxxxxxxxxxxxxxxxxxxx
 Insert PD disk into a PD drive
      Hit any key when ready_
```

Press any key.

● Display

```
PD DRIVE TEST
      Writing PD address = xxxxxxxxH
      ASPI: SCSI command is in progress
      ASPI: SCSI command complete successfully
            HOST      STATUS = 00
            TARGET    STATUS = 00
      Reading PD Address = xxxxxxxxH
      ASPI: SCSI command is in progress
      ASPI: SCSI command complete successfully
            HOST      STATUS = 00
            TARGET    STATUS = 00
```

(Normal Message): Test done ! ! Hit any key when ready._
When an error message is displayed, refer to [6.3 Error Message].

For 7. CD-ROM TEST. (Fig.15)
Insert the Firstaid CD into the PD drive.
Press (7) and (Enter) keys.

● Display

```
CD-ROM TEST

Place the enclosed Firstaid CD on the CD-ROM drive.
Hit any key when ready_
```

Press any key.

(Normal Message): Test done ! ! Hit any key when ready._
When an error message is displayed, refer to [6.3 Error Message].

12) SOUND TEST

Fig.1 displayed.
Press (16) and (Enter) keys. Fig.15 displayed.

● Display

```
1. TEST ALL DEVICES      (□DEVICES)
2. TEST AUTOMATICALLY    (■DEVICES)
3. CHANGE MENU
4. EXIT
5. FM PLAY TEST
6. SOUND REGISTER TEST
SELECT : _
```

(Fig.15)

For 5. FM PLAY TEST. (Fig.15)
Press (5) and (Enter) keys.

(Normal Message): Test done ! ! Hit any key when ready._
When an error message is displayed, refer to [6.3 Error Message].

For 6. SOUND REGISTER TEST. (Fig.15)
Press (6) and (Enter) keys.

● Display

```
SOUND REGISTER (22xH) R/W OK.
```

(Normal Message): Test done ! ! Hit any key when ready._
When an error message is displayed, refer to [6.3 Error Message].

13) PC CARD CONTROLLER TEST.

Fig.1 displayed.
Press (17) and (Enter) keys.

(Normal Message): Test done ! ! Hit any key when ready._
when an error message is displayed, refer to [6.3 Error Message].

14) STATUS LCD TEST.

Fig.1 displayed.
Press (18) and (Enter) keys.

● Display

```
Status LCD TEST
Moon                Is it light on?(Y/N) ---> Press (Y) key.
Battery frame       Is it light on?(Y/N) ---> Press [Y] key.
1                   Is it light on?(Y/N) ---> Press [Y] key.
    8               Is it light on?(Y/N) ---> Press [Y] key.
        8           Is it light on?(Y/N) ---> Press [Y] key.
Percent (%)         Is it light on?(Y/N) ---> Press [Y] key.
Water Tap           Is it light on?(Y/N) ---> Press [Y] key.
Drop of water       Is it light on?(Y/N) ---> Press [Y] key.
Key                 Is it light on?(Y/N) ---> Press [Y] key.
PD                  Is it light on?(Y/N) ---> Press [Y] key.
CD                  Is it light on?(Y/N) ---> Press [Y] key.
PD/CD Access        Is it light on?(Y/N) ---> Press [Y] key.
HD Access           Is it light on?(Y/N) ---> Press [Y] key.
FD Access           Is it light on?(Y/N) ---> Press [Y] key.
CapsLK              Is it light on?(Y/N) ---> Press [Y] key.
NumLK               Is it light on?(Y/N) ---> Press [Y] key.
ScrlLK              Is it light on?(Y/N) ---> Press [Y] key.
PadLK               Is it light on?(Y/N) ---> Press (Y) key.
```

(Normal Message): Test done ! ! Hit any key when ready._

15) INFRARED COMMUNICATION PORT TEST.

Fig.1 desplayed.
Press (19) and (Enter) keys. Fig.16 displayed.

● Display

```
  1. TEST ALL DEVICES      (□DEVICES)
  2. TEST AUTOMATICALLY    (■DEVICES)
  3. CHANGE MENU
  4. EXIT
■ 5. CONTROLLER REGISTER R/W TEST
■ 6. INTERNAL LOOPBACK TEST

SELECT MENU : _
```

(Fig.16)

For 5. CONTROLLER REGISTER R/W TEST. (Fig.17)
Press (5) and (Enter) keys.

● Display

```
CONTROLLER REGISTER R/W TEST
Infrared port (I/O address xxxH)
```

(Normal Message): Test done ! ! Hit any key when ready.
When an error message is displayed, refer to [6.3 Error Message].

For 5. CONTROLLER REGISTER R/W TEST. (Fig.17)
Press (5) and (Enter) keys.

● Display

INTERNAL LOOPBACK TEST Infrared port (I/O address xxxH)

(Normal Message): Test done ! ! Hit any key when ready.
When an error message is displayed, refer to [6.3 Error Message].

6.3 Error Message

Test Item	Error Message		Source of Problem	Ref.Page
Main P.C.B. Test				
CMOS RAM shutdown byte r/w test	CRAM	Shutdown byte test failed. (F10) Write data: xxxx Read: xxxx	Main P.C.B.	7-10
Programmable interrupt timer test	PIT	Timer #2 counter r/w failed. (F10) Write data: xx Read: xx	Main P.C.B.	7-10
	PIT	Timer count failed. (F10) High count value expected: 00 current data: xx		
Page register r/w test	PREG	Page register r/w test failed. (byte) (F10) Write data = xx Read data = xx	Main P.C.B.	7-10
	PREG	Page register r/w test failed. (word) (F10) Write data = xx Read data = xx		
DMA controller register r/w test	DMAC	DMA controller register r/w test failed. (F10) I/O address: xxxx Write data: xxxx Read data: xxxx	Main P.C.B.	7-10
Keyboard controller test	KBCTRL	keyboard controller input buffer full. (F10)	Main P.C.B.	7-10
	KBCTRL	keyboard line always low. (clock) (F10)		
	KBCTRL	Keyboard line always high. (clock) (F10)		
	KBCTRL	keyboard line always low. (data) (F10)		
	KBCTRL	keyboard line always high. (data) (F10)		
	KBCTRL	keyboard controller output buffer empty. (F10)		
	KBCTRL	keyboard controller self test failed. (F10) Return code: xx		
Programmable interrupt controller test	PIC	PIC #0 interrupt mask register failed. (F10) Write data: xx Read data: xx	Main P.C.B.	7-10
	PIC	PIC #1 interrupt mask register failed. (F10) Write data: xx Read data: xx		
	PIC	PIC #0 handling error (F10) ISR status: xx		
	PIC	PIC #1 handling error (F10) ISR status: xx		
	PIC	PIC #0 no interrupt occurred. (F10)		
	PIC	PIC #1 no interrupt occurred. (F10)		
Real-time clock test	RTC	Real-time clock UIP bit always ON. (F10)	Main P.C.B.	7-10
	RTC	Real-time clock UIP bit always OFF. (F10)		
	RTC	Real-time clock data out of range. (F10) (Second data: ss) (Minute data: mm) (Hour data: hh) (Data data: dd) (Month data: mm) (Year data: yyyy)		

Test Item	Error Message		Source of Problem	Ref.Page
RAM Test				
DRAM r/w test	DRAM	DRAM R/W test failed. (F11) Address xxxxxxxxH Write data = xxH Read data =xxH	Main P.C.B.	7-10
DRAM refresh test	DRAM	DRAM Refresh test failed. (F11) Address xxxxxxxxH Write data = xxH Read data = xxH	Main P.C.B.	7-10
DRAM address line test	DRAM	DRAM Address Line test failed. (F11) The data written into address xxxxxxxxH can be read from address yyyyyyyyH	Main P.C.B.	7-10
Protect test		[xx] Protected mode error. (F11)	Main P.C.B.	7-10
Keyboard Test				
Keyboard reset test	KEY	Keyboard failed. (F40)	Main P.C.B.	7-10
Keyboard data test	KEY	Keyboard has been hit or broken. (F10) SCAN code : xx	Main P.C.B.	7-10
Floppy Disk Drive Test				
Floppy disk controller test		FDC failed. (F10) Master status: n1n2 Floppy Disk Controller (FDC) master status has failed. Data bus or FDC chip has failed. (n1n2 is FDC master status listed on page 6-28.)	Main P.C.B.	7-10
Floppy disk controller test		Init. failed. (F10) BIOS status : xx Floppy Disk Controller (FDC) initialization has failed. Data bus or FDC chips have failed. (xx is BIOS disk error status listed on page 6-28.)	Main P.C.B.	7-10
Floppy disk drive test		Seek failed (max. track) (F30) Seek has failed. Floppy Disk Controller (FDC) cable or FDC chip has failed.	FDD	7-2,7-14
Floppy disk drive test		Seek failed (0 track) (F30) Seek has failed. Floppy Disk Controller (FDC) cable or FDC chip has failed.	FDD	7-2,7-14
Floppy disk controller test		Cannot change spindle speed of FDD motor (F10)	Main P.C.B.	7-10
Hard Disk Drive Test				
HDC reset test		HDC reset failed. (F31)	HDD	7-2,7-14
HDC diagnostics test		HDC internal diagnostic failed. (F31)	HDD	7-2,7-14
HDD set parameter test		HDD set drive parameter failed. (F31) BIOS status: xx HDC status: xx HDC error status: xx	HDD	7-2,7-14
HDD drive ready test		HDD drive not ready. (F31) BIOS status: xx HDC status: xx HDC error status: xx	HDD	7-2,7-14
HDD recalibrate test		HDD recalibrate failed. (F31) BIOS status: xx HDC status: xx HDC error status: xx	HDD	7-2,7-14
HDD seek test		HDD seek failed. (F31) BIOS status: xx HDC status: xx HDC error status: xx	HDD	7-2,7-14
HDD seek time test		HDD seek does not complete within some period. (F31) BIOS status: xx HDC status: xx HDC error status: xx	HDD	7-2,7-14

Test Item	Error Message	Source of Problem	Ref.Page
Serial Port Test			
Register test	RS232 Serial port failed. (F71) Interrupt ID Write: xx Read: xx RS232 Serial port failed. (F71) Divisor Write: xxxx Read: xxxx	Main P.C.B.	7-10
Internal loopback test	RS232 Serial port data loopback failed. (F71) Line & modem status: n1n2,n3n4 (Refer to the tables of loopback line status and loopback modem status on page 6-28.) RS232 Serial port data loopback failed. (F71) Xmit: xx Recv: xx RS232 Serial port signal loopback failed. (F71) Modem status: n3n4 Expected: n3'n4' (n3n4: result by test. Refer to the table of modem status on page 6-28. n3'n4': expected status.)	Main P.C.B.	7-10
External loopback test	RS232 Serial port signal real loopback test failed. (F71) Modem status: n3n4 Expected: n3'n4' (n3n4: Refer to the table of line status on page 6-28.) RS232 Serial port data real loopback test failed. (F71) Line status : n1n2 (n1n2: Refer to the table of line status on page 6-28.) RS232 Serial port data real loopback test failed. (F71) Xmit: xx Recv: xx RS232 Data real loopback transmit failed. (F71) Line status: n1n2 (n1n2: Refer to the table of line status on page 6-28.) RS232 Data real loopback interrupt request failed. (F71) Line status: n1n2 (n1n2: Refer to the table of line status on page 6-28.) RS232 Data real loopback receive failed. (F71) Line status: n1n2 (n1n2: Refer to the table of line status on page 6-28.)	Main P.C.B.	7-10
Parallel Port Test			
Printer Out Test	PPA Time -out error occurred with parallel printer. (F72) BIOS status: n1n2 Character: xx PPA I/O error occurred with parallel printer. (F72) BIOS status: n1n2 Character: xx PPA Paper end occurred with parallel printer. (F72) BIOS status: n1n2 Character: xx (n1n2 is a printer BIOS error status listed on page 6-29. xx is the character sent to the printer.)	Main P.C.B.	7-10
External Loopback test	PPA Parallel port interrupt request failed. (F72) PPA Parallel port signal real loopback test failed. (F72) Status: xx Expected: xx	Main P.C.B.	7-10

Test Item	Error Message	Source of Problem	Ref.Page
SCSI Test			
SCSI controller test	ASPI Manager not installed. (F32) Please confirm your CONFIG.SYS file. ASPI: SCSI command aborted. (F32) ASPI: SCSI command is failed. (F32) ASPI: SCSI command is invalid. (F32) ASPI: Invalid SCSI Adapter number (F32) ASPI: No SCSI Adapter. Status = (xxH) (F32) ASPI: No SCSI Command Executed (F32) ASPI: Invalid ASPI Status (xxH) (F32) (TARGET is busy) SENSE DATA xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx	Main P.C.B.	7-10
PD test	ASPI Manager not installed. (F32) Please confirm your CONFIG.SYS file. ASPI: SCSI command aborted. (F32) ASPI: SCSI command is failed. (F32) ASPI: SCSI command is invalid. (F32) ASPI: Invalid SCSI Adapter number (F32) ASPI: No SCSI Adapter. Status = (xxH) (F32) ASPI: No SCSI Command Executed (F32) ASPI: Invalid ASPI Status (xxH) (F32) (TARGET is busy) SENSE DATA xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx	Main P.C.B. or PD Drive or PD Media	7-10, 7-11
CD-ROM test	ASPI Manager is not installed. (F32) Please confirm your CONFIG.SYS file. No CD-ROM drive found. (F32) Invalid CD-ROM or no CD-ROM. (F32)	Main P.C.B. or CD Media	7-10
Infrared Communication Port Test			
Controller register r/w test	Infrared port failed. (F80)	Main P.C.B.	7-10
Internal loopback test	Transmitted data = xxH, Received data = yyH Infrared port loopback test failed. (F80) Transmitted data = xxbytes, Received data = yybytes Infrared port loopback test failed. (F80)	Main P.C.B.	7-10
PC CARD controller Test			
	PC CARD Controller is invalid. (F10) Controller status = xxH	Main P.C.B.	7-10
Sound Test			
Sound register test	SOUND REGISTER R/W ERROR! !	Main P.C.B.	7-10
Battery Test			
	Battery Overcharged (F10) Battery Overdischarged (F10) Battery Cell balance error (F10) Battery Switching error (F10) Battery Temperature is out of range (F10) Battery Exceed maximum charging amount (F10) Battery Exceed maximum charging time (F10) Battery Serial communication error (F10) Battery Charging current does not decrease (F10) Battery No response from battery (F10) Battery Charging current error (F10)	Main P.C.B. or Power P.C.B. or Battery Pack	7-10, 7-11, 7-3

● FDC master status

Nibble	Bit	Meaning
n1	D3	1: FDC data register is ready to receive and transmit data
	D2	1: Transmit data from FDC to processor
	D1	1: Transmit in non-DMA mode
	D0	1: FDC is busy
n2	D3	
	D2	
	D1	1: Seek in drive B
	D0	1: Seek in drive A

● BIOS disk error status

Status	Meaning
80	Time out
40	Seek out
20	FDC failed
10	CRC error
0C	Bad media type
09	DMA boundary
08	DMA overrun
06	Diskette removed
04	Sector not found
03	Write protected
02	No address mark
01	Invalid command

● BIOS error status

Status	Meaning
FF	Sense status failed
E0	Error status register
CC	Write fault
BB	Undefined error
AA	Drive not ready
80	Time out
40	Seek error
20	Controller failed
11	ECC corrected data error
10	Bad CRC or ECC
0F	DMA arbitration level out of range
0E	Control data address mark detected
0D	Invalid number of sectors on format
0B	Bad cylinder
0A	Bad sector
09	DMA boundary
08	DMA overrun
07	Drive parameter error
05	Reset failed
04	Sector not found
02	No address mark
01	Invalid command

● HDC error status

Nibble	Bit	Meaning
n3	D3	1: Back block
	D2	1: Non-correctable ECC error
	D1	1:
	D0	1: Selector not found
n4	D3	1:
	D2	1: HD not ready
	D1	1: No track 00 signal
	D0	1: No address mark

● HDC status

Nibble	Bit	Meaning
n1	D3	1: HDC is busy
	D2	1: HDC is ready
	D1	1: Write fault signal from HD
	D0	1: Seek is completed
n2	D3	1: HDC requests to transmit data
	D2	1: ECC corrected data
	D1	1: Index pulse signal
	D0	1: Error found in executed instructions

● Loopback line status

Nibble	Bit	Meaning
n1	D3	1: Timing out
	D2	1: Transmit shift register (is) empty
	D1	1: Transmit-holding register (is) empty
	D0	1: Break detect
n2	D3	1: Framing error
	D2	1: Parity error
	D1	1: Overrun error
	D0	1: Data ready

● Loopback modem status

Nibble	Bit	Meaning
n3	D3	1: Carrier detect (CD)
	D2	1: Ring indicator (RING)
	D1	1: Data set ready (DSR)
	D0	1: Clear to send (CTS)
n4	D3	
	D2	
	D1	
	D0	

● Printer BIOS error status

Nibble	Bit	Meaning
n1	D3 D2 D1 D0	0: Busy 1: Acknowiedge 1: Paper end 1: Printer is selected
n2	D3 D0	1: I/O error 1: Time-out

- When an error occurs during format, verify, write and read tests for FDD, an error message is displayed in the following format of the command and error names:

(Format of Error Message)

[Command Name] failed: [Error Name] Cylinder = xx Head = xx Sector = xx

Command Name: Read
Write
Verify
Format
Read long
Write long
Command

Error Name: HDC not found (FFH)
Bad err register (E0H)
Write fault (CCH)
Undefined error (BBH)
Drive not ready (AAH)
Time-out (80H)
Seek error (40H)
FDC or HDC error (20H)
Data corrected (11H)
CRC or ECC error (10H)
Bad track (0BH)
Bad sector mark (0AH)
64 K boundary (09H)
DMA overrun (08H)
Parameter error (07H)
Reset error (05H)
No record (04H)
Write protected (03H)
No address mark (02H)
Invalid command (01H)

When there is a difference between write data and read data, the following error message is displayed:

Compare error Cylinder = xx Head = xx Sector = xx

- When an error occurs during format, write long, read long, write and read tests for HDD, an error message is displayed in the following format of command and error names:

(Format of Error Message)

[Command Name] failed: [Error Name] Cylinder = xx Head = xx Sector = xx

Command Name: Please refer to the FDD section above.
Error Name: Please refer to the FDD section above.

7. Disassembly/Reassembly

Note: Befor disassembling, be sure to perform the following procedures.

1. Make sure the "Suspend/Resume" or "Hibernation" feature is disabled.
2. Turn the power switch OFF and unplug the unit.
3. Disconnect the AC adapter and remove Battery Pack as described at Ref. No.3.
4. Remove the FDD pack or other devices from Multimedia Pocket. (Ref. No.1)
5. Remove the optional PC card and RAM card, if they are installed (Ref. No.4 and 5)

Caution: 1. Please follow directions carefully.
2. Be carefull of static electricity.
3. Do not interchange screws in any part of the system.

● Contents

Ref.No.	Item	Pages
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2	Removing HDD (Hard Disk Drive) Pack	7-2
3	Removing Battery Pack	7-3
4	Removing PC CARD (if installed)	7-3
5	Removing RAM CARD (if installed)	7-4
6	Removing Sub Battery	7-4,7-5
7	Removing Keyboard Unit	7-5,7-6
8	Removing Display Unit	7-7
9	Removing Palm Rest Cabinet	7-7,7-8
10	Removing Keyboard Pop Up Unit	7-9
11	Removing CPU P.C.B.	7-10
12	Removing Main P.C.B. and Fan 1	7-10
13	Removing PD/CD-ROM Drive	7-11
14	Removing Power P.C.B.	7-11
15	Removing LCD Unit and Speakers	7-11,7-12
16	Removing Backlight Lamp and LCD FPC	7-12,7-13
17	Removing FDD	7-14
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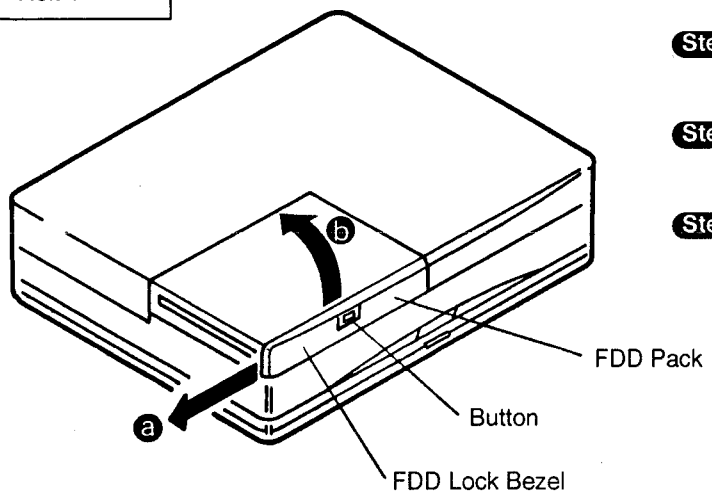
21	Removing Fan 2 and 3	7-16
22	Removing Motor Ass'y and Gear (Keyboard Pop Up Unit)	7-16
23	Manually opening PD Drive (if PD DriveTray will not open or close)	7-17,7-18

Ref. No. 1 Removing FDD (Floppy Disk Drive) Pack

Procedure
Ref. 1



(Fig. 1)

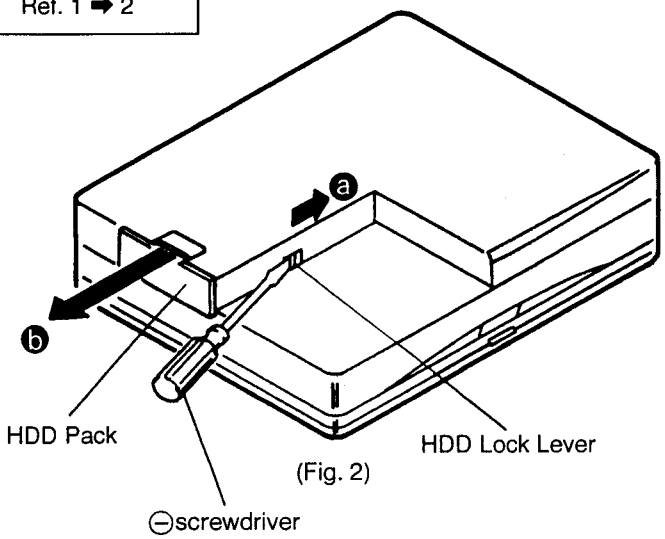
Step 1 Push the Button and slide the FDD Lock Bezel in the direction of arrow ⓐ. (Fig. 1)

Step 2 Lift the Side of FDD Pack in the direction of arrow ⓑ. (Fig. 1)

Step 3 Remove the FDD Pack. (Fig. 1)

Ref. No. 2 Removing HDD (Hard Disk Drive) Pack

Procedure
Ref. 1 ➡ 2



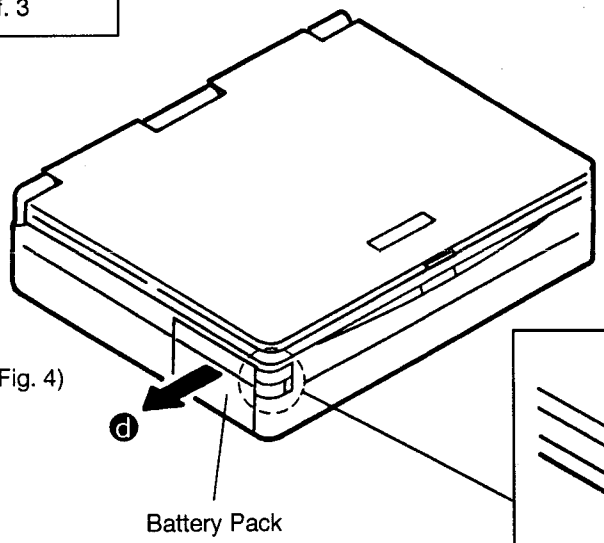
(Fig. 2)

Step 1 Use a ⊖screwdriver to slide the HDD Lock Lever in the direction of arrow ⓐ. (Fig. 2)

Step 2 Remove the HDD Pack in the direction of arrow ⓑ. (Fig. 2)

Ref. No. 3 Removing Battery Pack

Procedure
Ref. 3

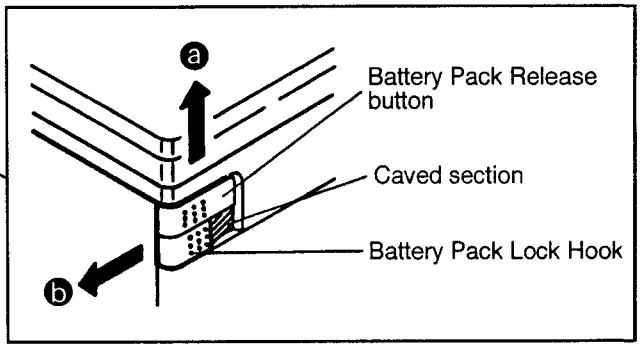


(Fig. 4)

Step 1 Slide the Battery Pack Release button in the direction of arrow ⓐ. (Fig. 3)

Step 2 While sliding the Battery Pack Release button up, push the caved section of Battery Pack Lock Hook. (This unlocks the Battery Pack from the main unit.) Then slide the Battery Pack Lock Hook in the direction of arrow ⓑ. (Fig. 3)

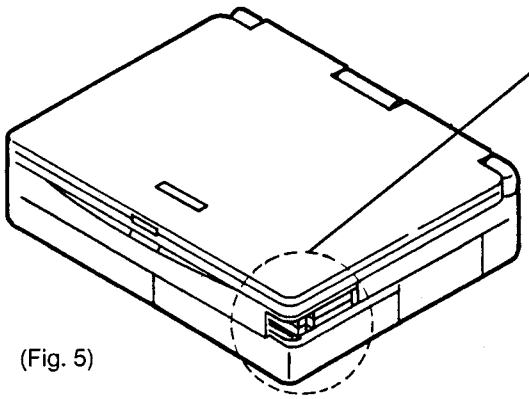
Step 3 Disconnect the Battery Pack in the direction of arrow ⓓ. (Fig. 4)



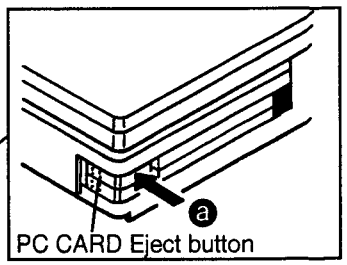
(Fig. 3)

Ref. No. 4 Removing PC CARD (if installed)

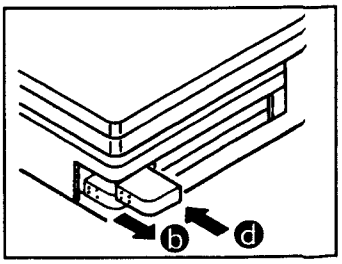
Procedure
Ref. 4



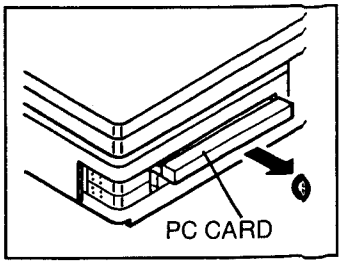
(Fig. 5)



(Fig. 5-2)



(Fig. 5-3)



(Fig. 5-4)

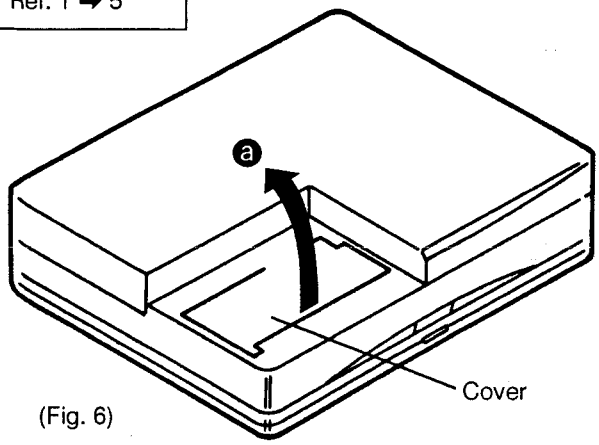
Step 1 Push the PC CARD Eject button in the direction of arrow ⓐ. (Fig. 5-2)
The Eject button protrudes from the cabinet as arrow ⓑ. (Fig. 5-3)

Step 2 Push the protruded button in the direction of arrow ⓓ. (Fig. 5-3)

Step 3 The PC CARD will slide out in the direction of arrow ⓔ. (Fig. 5-4)

Ref No. 5 Removing RAM CARD (if installed)

Procedure
Ref. 1 ➡ 5

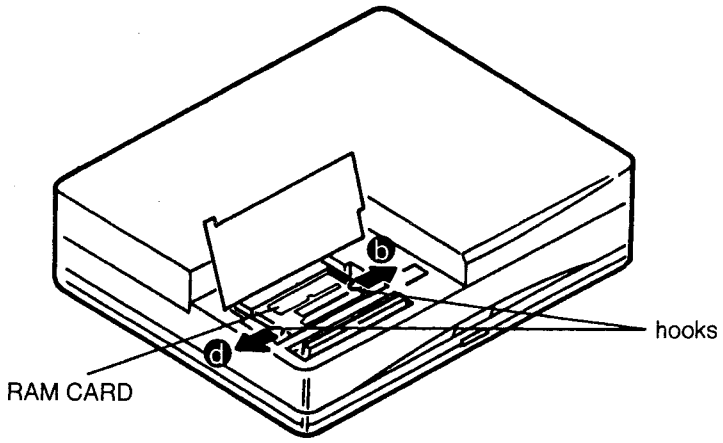


(Fig. 6)

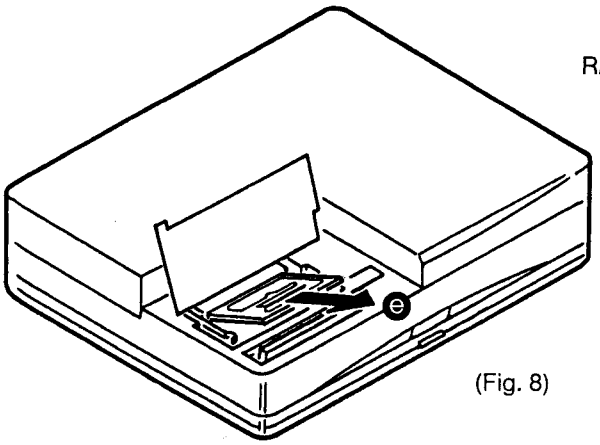
Step 1 Open the cover slowly in the direction of arrow ⓐ. (Fig. 6)

Step 2 Open the hooks on both side in the direction of arrow ⓑ and ⓓ. (Fig. 7)

Step 3 Disconnect the RAM CARD in the direction of arrow ⓔ. (Fig. 8)



(Fig. 7)



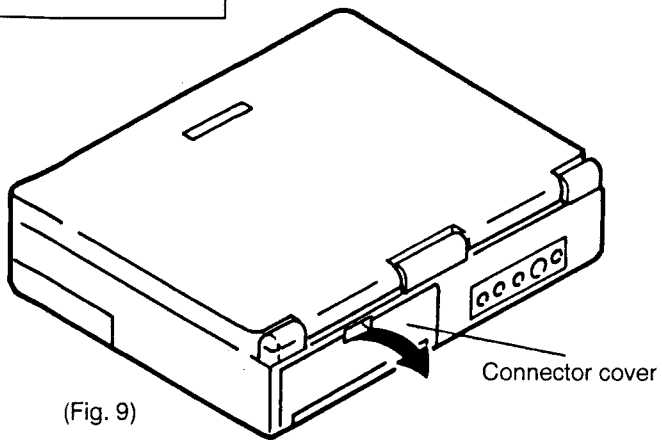
(Fig. 8)

Ref. No. 6 Removing Sub Battery

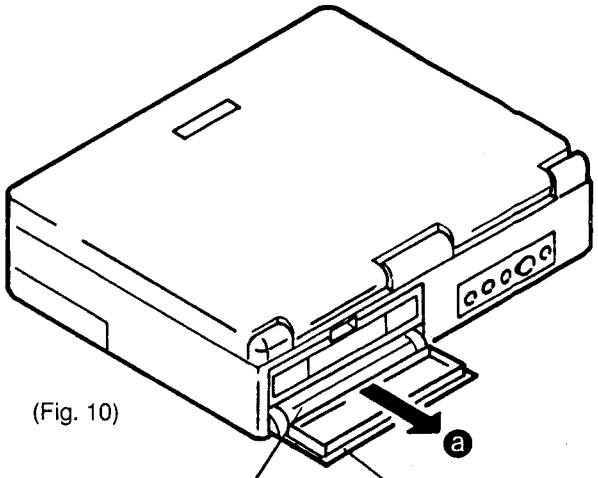
Procedure
Ref. 6

Step 1 Open the connector cover. (Fig. 9)

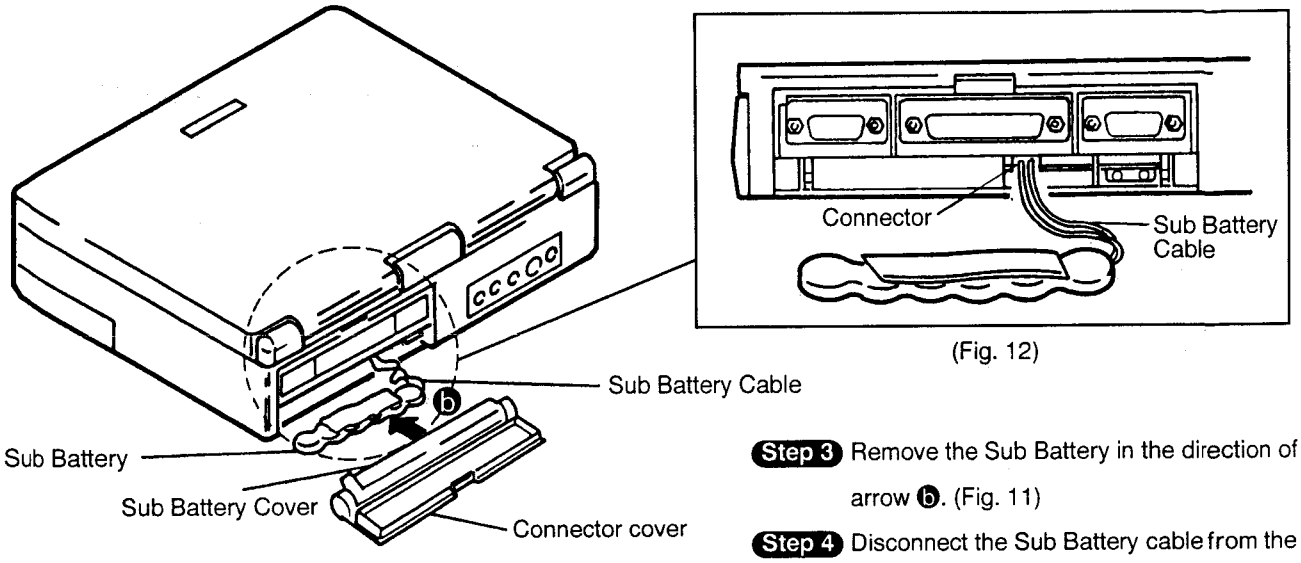
Step 2 Remove the connector cover and Sub Battery cover (with Sub Battery) in the direction of arrow ⓐ. (Fig. 10)



(Fig. 9)



(Fig. 10)



(Fig. 12)

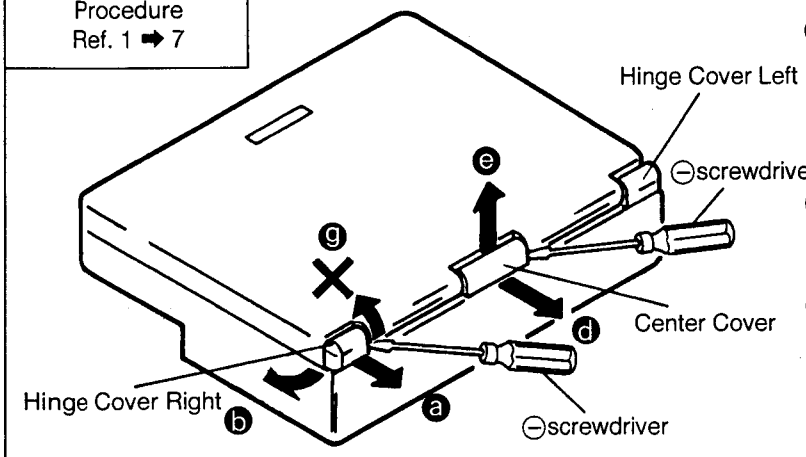
(Fig. 11)

Step 3 Remove the Sub Battery in the direction of arrow ⓑ. (Fig. 11)

Step 4 Disconnect the Sub Battery cable from the connector. (Fig. 12)

Ref. No. 7 Removing keyboard Unit

Procedure
Ref. 1 ➡ 7



(Fig. 13)

Step 1 Insert a ⊖screwdriver into the Hinge cover Right, and pull slightly in the direction of arrow ⓐ to release the hook. (Fig. 13)

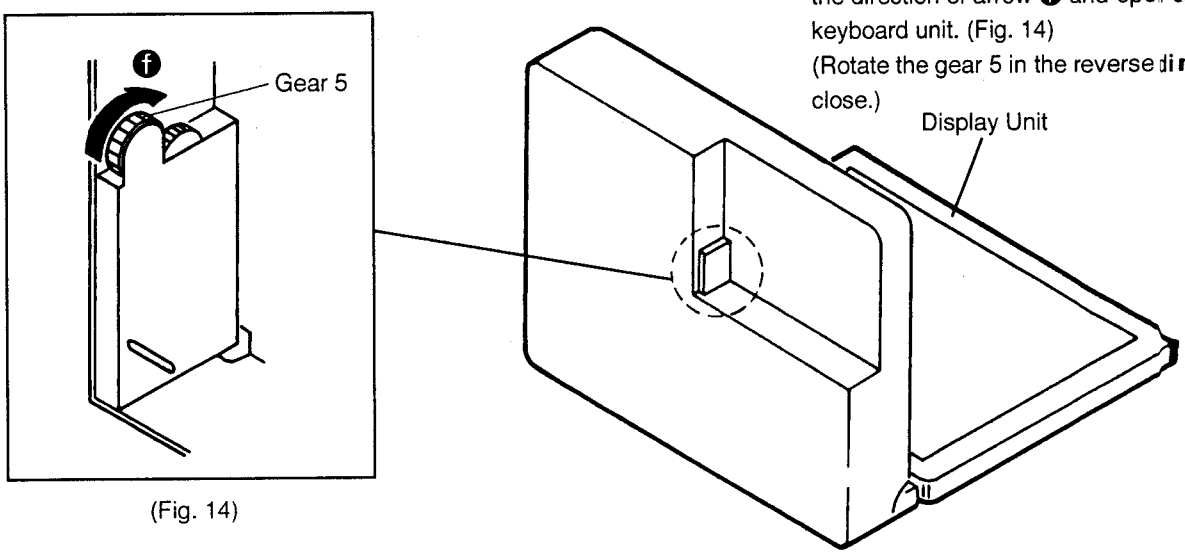
Step 2 With the hook released, slide the cover in the direction of arrow ⓑ to remove the cover. (Fig. 13)
Do not pull up the cover in the direction of arrow ⓖ, it may break the cover.

Step 3 Remove the Hinge Cover Left using the same procedure as for the Hinge Cover Right.

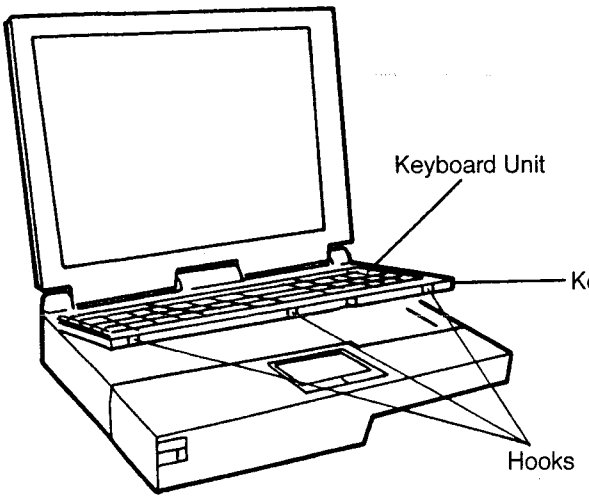
Step 4 Insert a ⊖screwdriver into the Center cover and Pull slightly in the direction of arrow ⓓ to release two hooks. (Fig. 13)

Step 5 Remove the Center cover in the direction of arrow ⓔ. (Fig. 13)

Step 6 Open the Display Unit. Rotate the gear 5 in the direction of arrow ⓕ and open the keyboard unit. (Fig. 14)
(Rotate the gear 5 in the reverse direction to close.)



(Fig. 14)



(Fig. 15)

Step 7 Release the three hooks and remove the Keyboard Pop Up Unit from the Keyboard Unit. (Fig. 15)

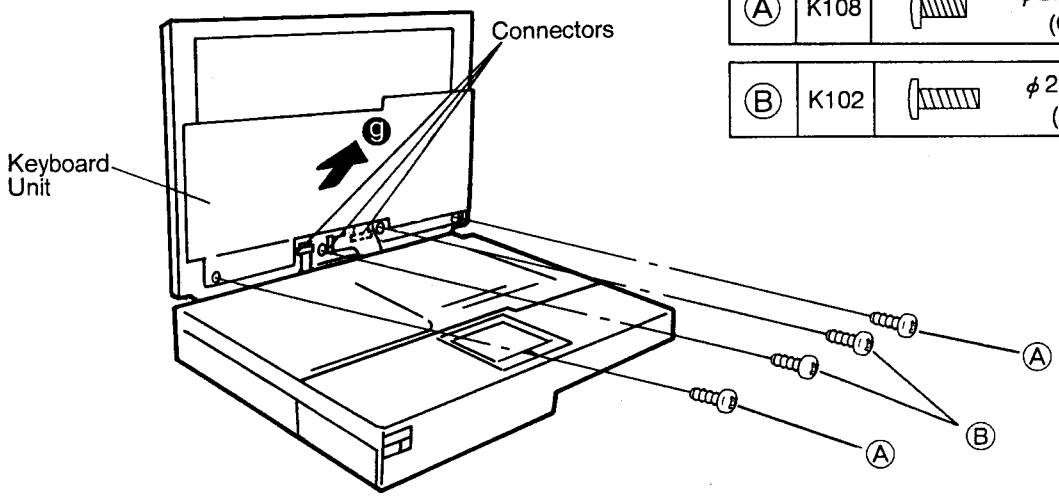
Step 8 Remove the two screws Ⓐ and two screws Ⓑ. (Fig. 16)

Step 9 Disconnect the three flat cables from the connectors.
Be carefull of the different types of connectors. (Fig. 16, 16-1)

Step 10 Remove the Keyboard Unit in the direction of arrow ❾. (Fig. 16)

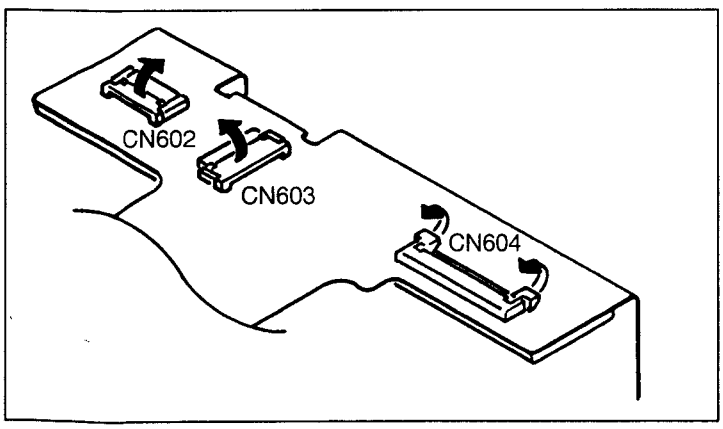
CAUTION :
Do not open the Keyboard Unit more than 90° , otherwise the LCD FPC or its connector will be DAMAGED !

Ⓐ	K108		ϕ2.6×6 mm (Gold)
Ⓑ	K102		ϕ2.6×8 mm (Black)



(Fig. 16)

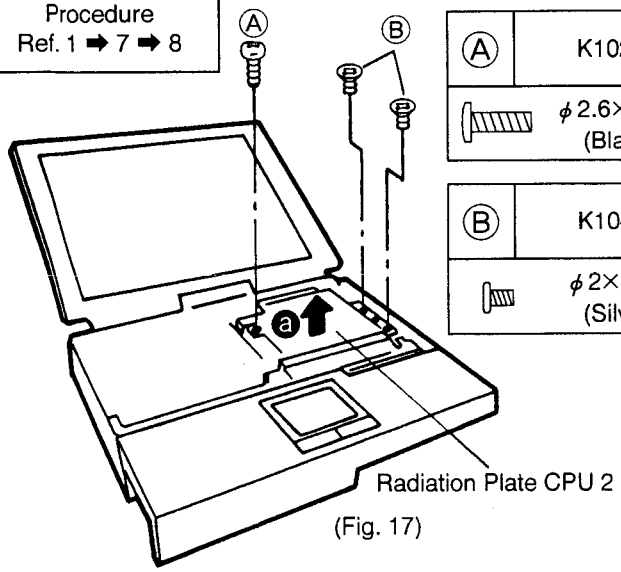
• Directions for releasing connector Locks



(Fig. 16-1)

Ref. No. 8 Removing Display Unit

Procedure
Ref. 1 ➡ 7 ➡ 8



(Fig. 17)

Ⓐ	K102
	ϕ2.6×8 mm (Black)
Ⓑ	K104
	ϕ2×3 mm (Silver)

Step 1 Remove the screw Ⓐ and two screws Ⓑ. (Fig. 17)

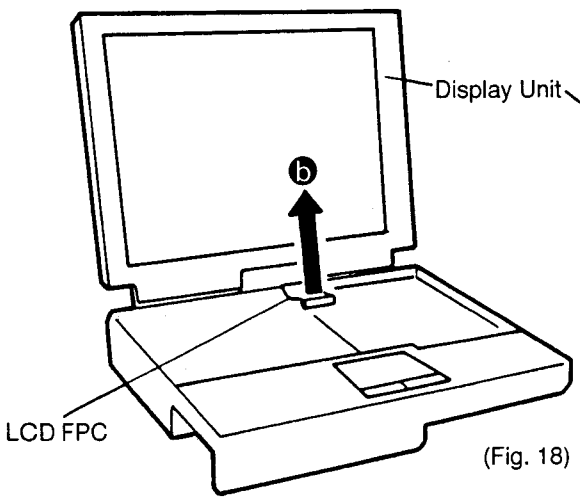
Step 2 Remove the Radiation Plate CPU 2 in the direction of arrow ❶. (Fig. 17)

Step 3 Disconnect the LCD FPC in the direction of arrow ❷. (Fig. 18)

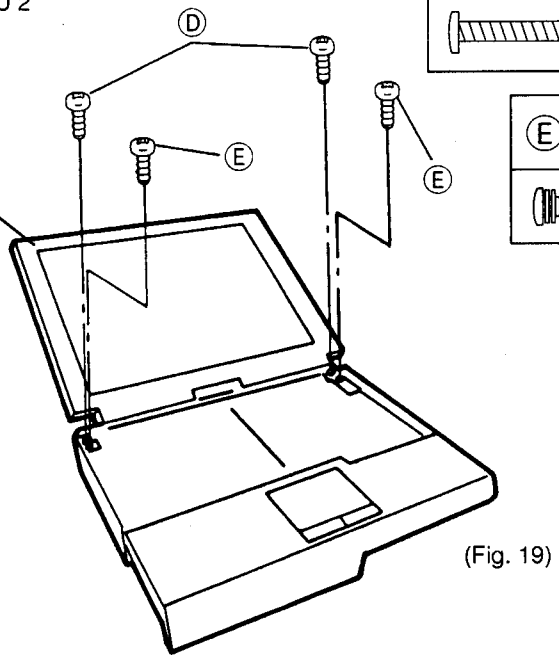
Step 4 Remove the two screws Ⓓ and the two screws Ⓔ. (Fig. 19)

Step 5 Remove the Display Unit. (Fig. 19)

Ⓓ	K106
	ϕ2.6×16 mm (Gold)
Ⓔ	K105
	ϕ2.6×6 mm (Silver)



(Fig. 18)



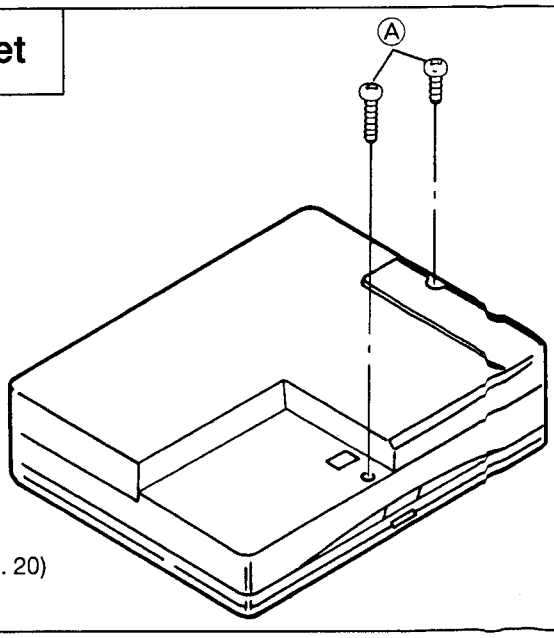
(Fig. 19)

Ref. No. 9 Removing Palm Rest Cabinet

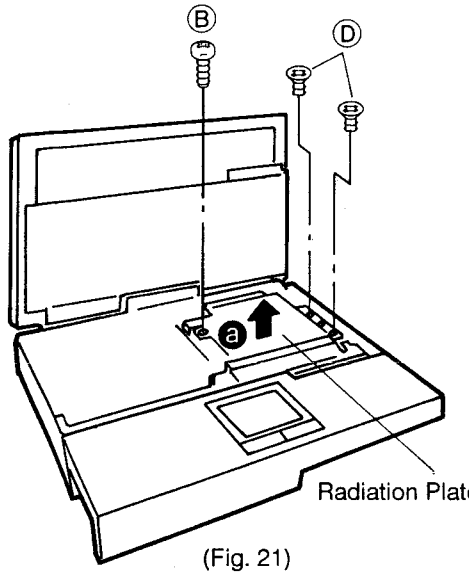
Procedure
Ref. 1 ➡ 9 (Step 1) ➡ 3 ➡ 4 ➡ 7 (Step 1~7) ➡ 9

Step 1 Remove the two screws Ⓐ. (Fig. 20)

Ⓐ	K103	ϕ2.6×10 mm (Black)



(Fig. 20)



(Fig. 21)

Step 2 Remove the screw Ⓑ and the two screws Ⓓ. (Fig. 21)

Step 3 Remove the Radiation Plate CPU 2 in the direction of arrow ⓐ. (Fig. 21)

Step 4 Disconnect the LCD FPC in the direction of arrow ⓑ. (Fig. 22)

Step 5 Remove the screw Ⓑ and the screw Ⓔ. (Fig. 23)

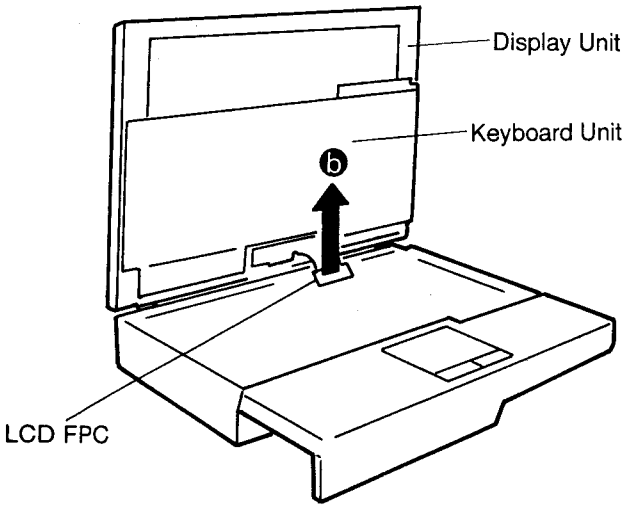
Step 6 Remove the Palm Rest Cabinet on side [A] in the direction of arrow ⓓ, next remove the Palm Rest Cabinet on side [B] in the direction of arrow ⓔ. (Fig. 24)

Step 7 Remove the whole Palm Rest Cabinet. (Fig. 24)

Step 8 Disconnect the Touch Pad FPC from CN18. (Fig. 25)

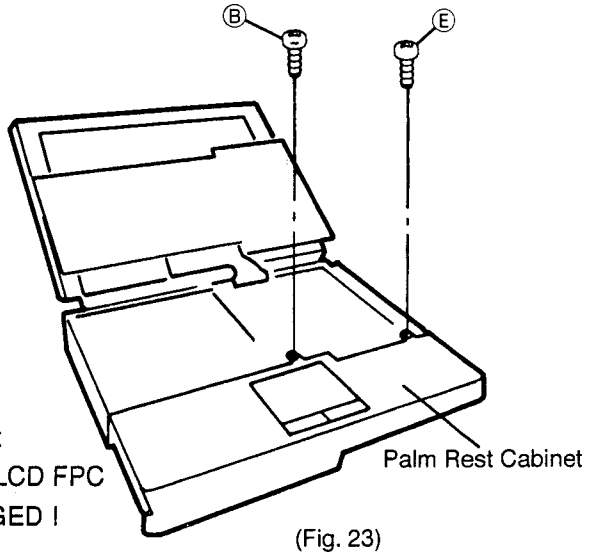
Ⓑ	K102	Ⓓ	K104
	φ2.6×8 mm (Black)		φ2×3 mm (Silver)

Ⓔ	K103	φ2.6×10 mm (Black)

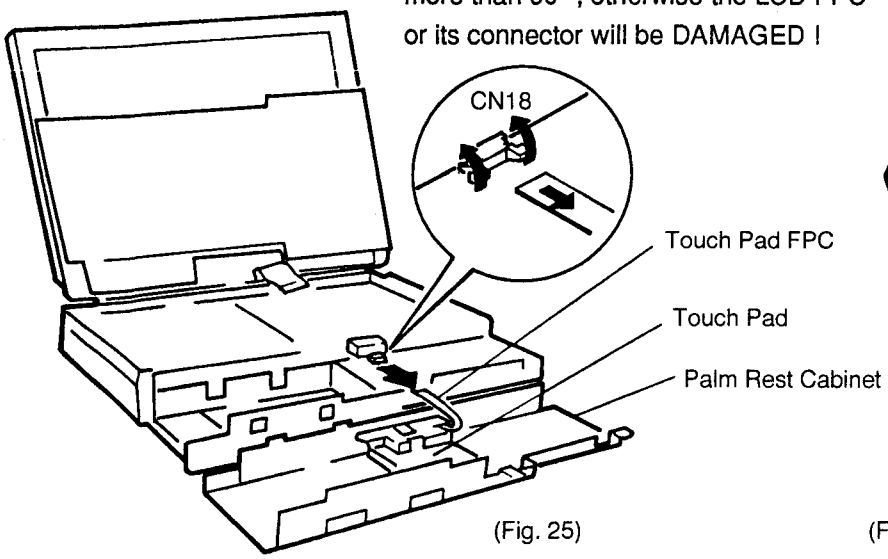


(Fig. 22)

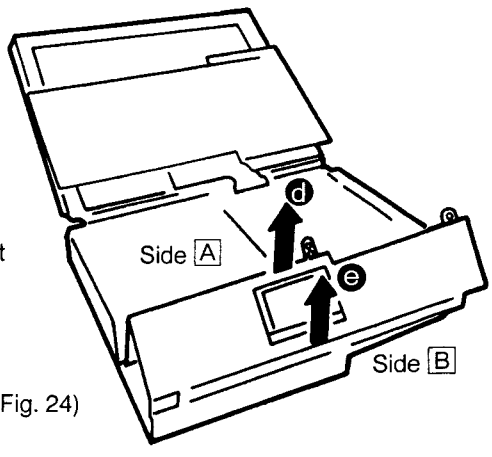
CAUTION :
Do not open the Keyboard Unit more than 90° , otherwise the LCD FPC or its connector will be DAMAGED !



(Fig. 23)



(Fig. 25)



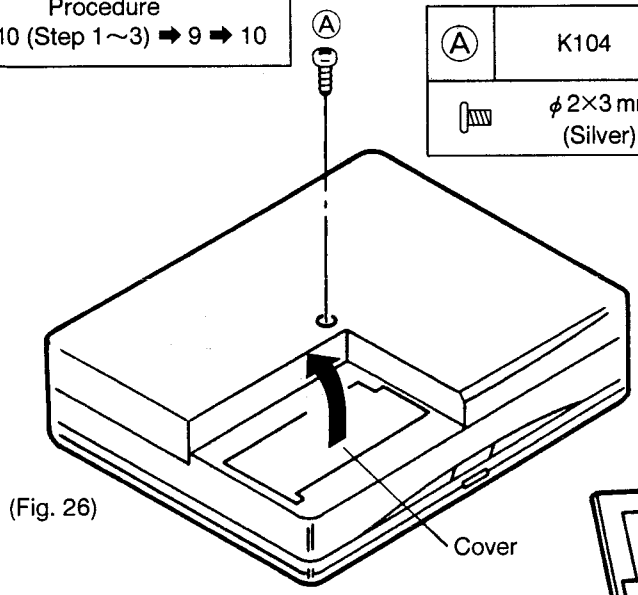
(Fig. 24)

Ref. No. 10 Removing Keyboard Pop Up Unit

Procedure
Ref. 10 (Step 1~3) ➡ 9 ➡ 10

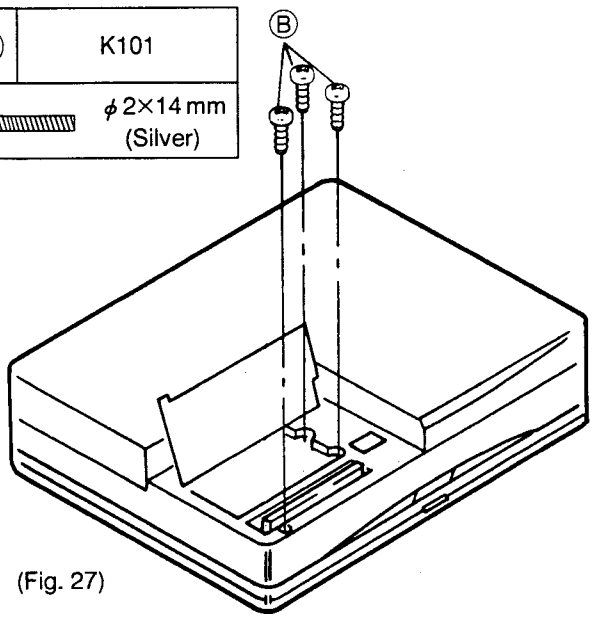
Ⓐ	K104
	ϕ2×3 mm (Silver)

Step 1 Remove the screw Ⓐ. (Fig. 26)
Step 2 Open the cover. (Fig. 26)
Step 3 Remove the three screws Ⓑ. (Fig. 27)
Step 4 Remove the PC CARD slot in the direction of arrow ⓐ. (Fig. 28)
Step 5 Disconnect the cables from CN14, CN16 and CN22. (Fig. 28)

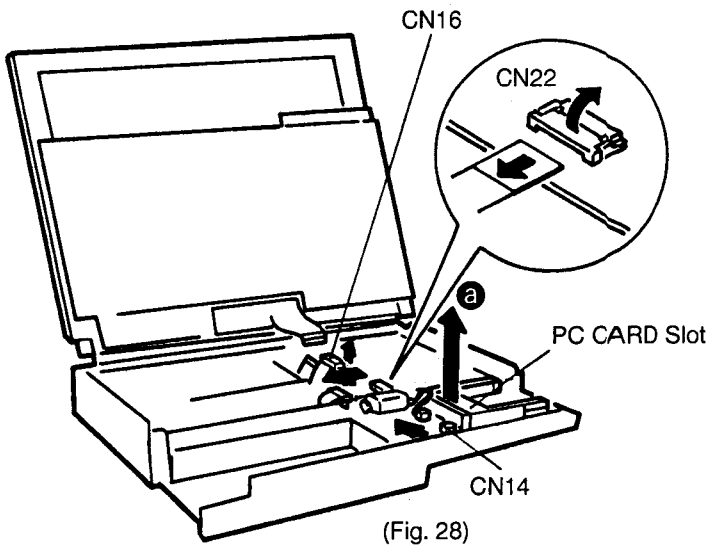


(Fig. 26)

Ⓑ	K101
	ϕ2×14 mm (Silver)

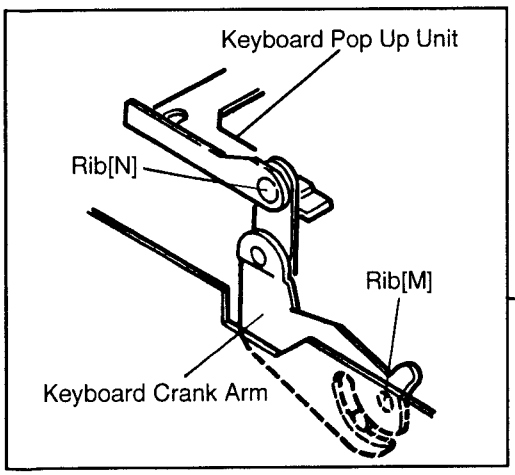


(Fig. 27)

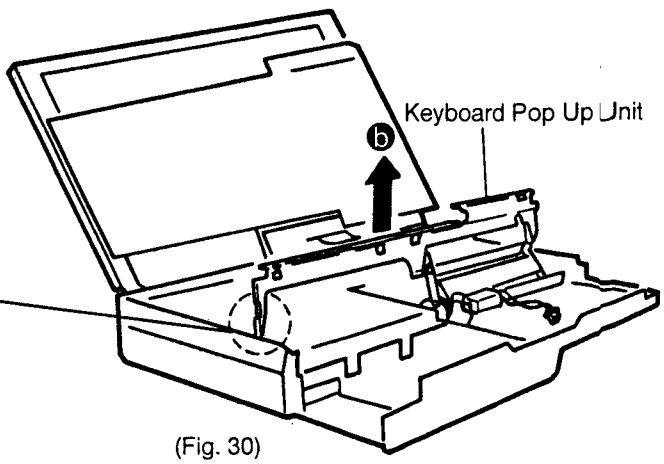


(Fig. 28)

Step 6 Remove the Keyboard Crank Arm from Rib [M]. (Fig. 29)
Step 7 Remove the Keyboard Pop Up Unit and Keyboard Crank Arm in the direction of arrow ⓑ. (Fig. 30)
Step 8 Remove the Keyboard Crank Arm from Rib [N]. (Fig. 29)



(Fig. 29)



(Fig. 30)

Ref. No. 11 Removing CPU P.C.B.

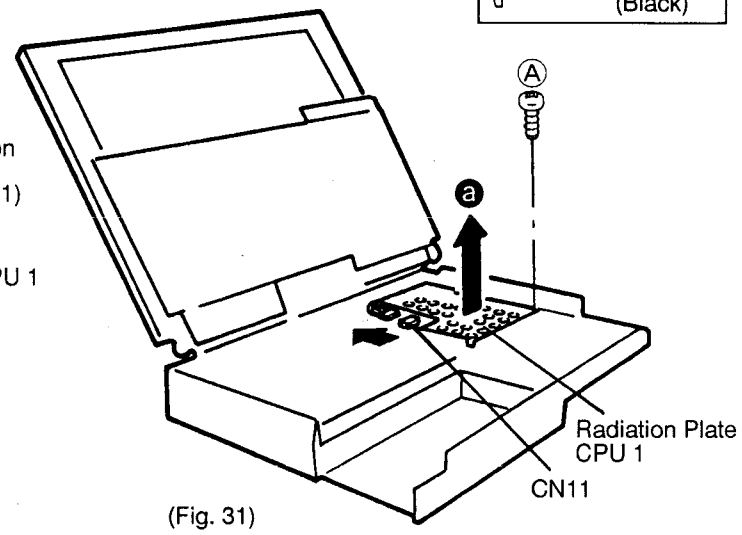
Procedure
Ref. 9 ➡ 10 ➡ 11

Ⓐ	K102
	ϕ2.6×8 mm (Black)

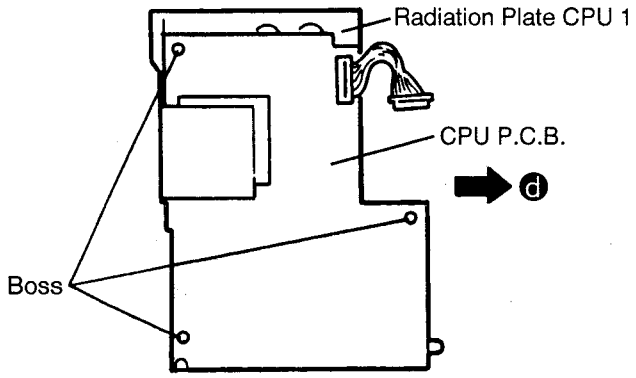
Step 1 Remove the screw Ⓐ. (Fig. 31)

Step 2 Disconnect the cable from CN11. (Fig. 31)

Step 3 Remove CPU P.C.B. together with the Radiation Plate CPU 1 in the direction of arrow ⓐ. (Fig. 31)



(Fig. 31)



(Fig. 32)

Step 4 Remove the Radiation Plate CPU 1 in the direction of arrow ⓓ. (Fig. 32)

Ref. No. 12 Removing Main P.C.B. and Fan 1

Procedure
Ref. 1 ➡ 2 ➡ 3 ➡ 4 ➡ 7 ➡ 8 ➡ 9 (Step 5 ➡ 8) ➡ 10 ➡ 11 ➡ 12

Ⓐ	K107		ϕ2.6×12 mm (Gold)
Ⓓ	K114		ϕ2×12 mm (Black)

Ⓑ	K102		ϕ2.6×8 mm (Black)

Step 1 Remove the Rubber Cap, screw Ⓐ and Tilt Stand. (Fig. 33)

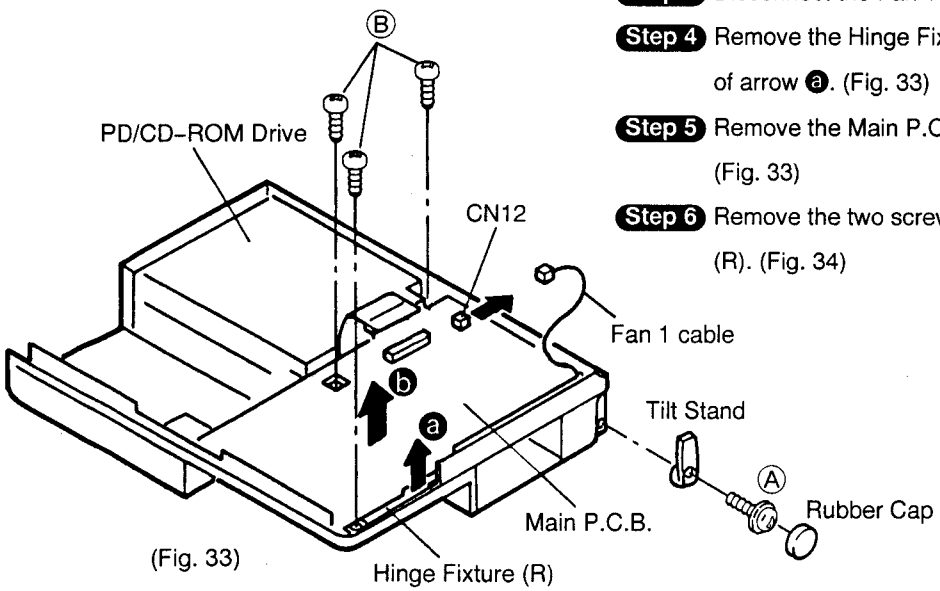
Step 2 Remove the three screws Ⓑ. (Fig. 33)

Step 3 Disconnect the Fan 1 cable from CN12. (Fig. 33)

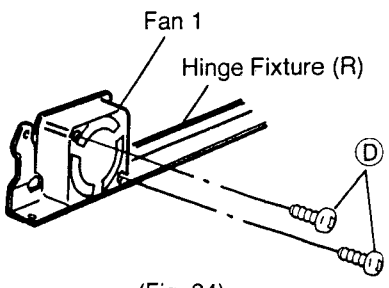
Step 4 Remove the Hinge Fixture (R) Ⓓ (with Fan) in the direction of arrow ⓐ. (Fig. 33)

Step 5 Remove the Main P.C.B. in the direction of arrow ⓑ. (Fig. 33)

Step 6 Remove the two screws Ⓓ and Fan 1 from Hinge Fixture (R). (Fig. 34)



(Fig. 33)



(Fig. 34)

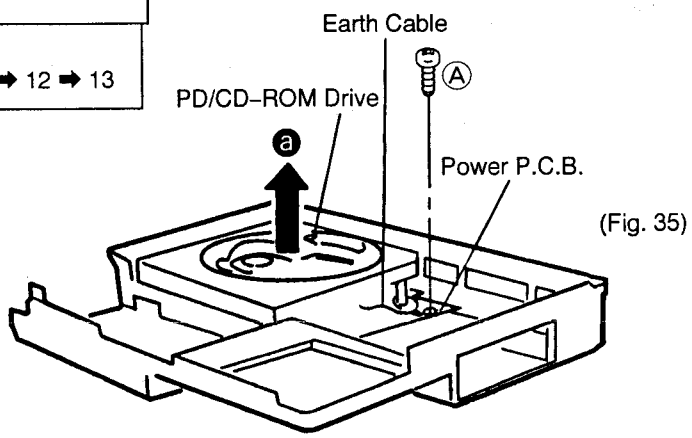
Ref. No. 13 Removing PD/CD-ROM Drive

Procedure
Ref. 1 ➡ 2 ➡ 3 ➡ 4 ➡ 7 ➡ 8 ➡ 9 (Step 5 ➡ 8) ➡ 10 ➡ 11 ➡ 12 ➡ 13

Step 1 Remove the screw Ⓐ and earth cable. (Fig. 35)

Step 2 Remove the PD/CD-ROM Drive the direction of arrow ⓐ. (Fig. 35)

Ⓐ	K108		ϕ2.6×6 mm (Gold)



(Fig. 35)

Ref. No. 14 Removing Power P.C.B.

Procedure
Ref. 1 ➡ 2 ➡ 3 ➡ 4 ➡ 7 ➡ 8 ➡ 9 (Step 5 ➡ 8) ➡ 10 ➡ 11 ➡ 12 ➡ 13 ➡ 14

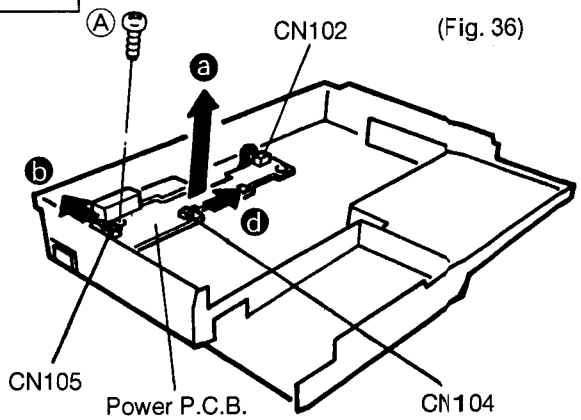
Ⓐ	K108		ϕ2.6×6 mm (Gold)

Step 1 Remove the screw Ⓐ. (Fig. 36)

Step 2 Disconnect the Sub Battery Cable from CN102. (Fig. 36)

Step 3 Remove the Power P.C.B. in the direction of arrow ⓐ. (Fig. 36)

Step 4 Disconnect the Fan 2, 3 cables from CN104, 105 in the direction of arrows ⓑ, ⓓ.



(Fig. 36)

Ref. No. 15 Removing LCD Unit and Speakers

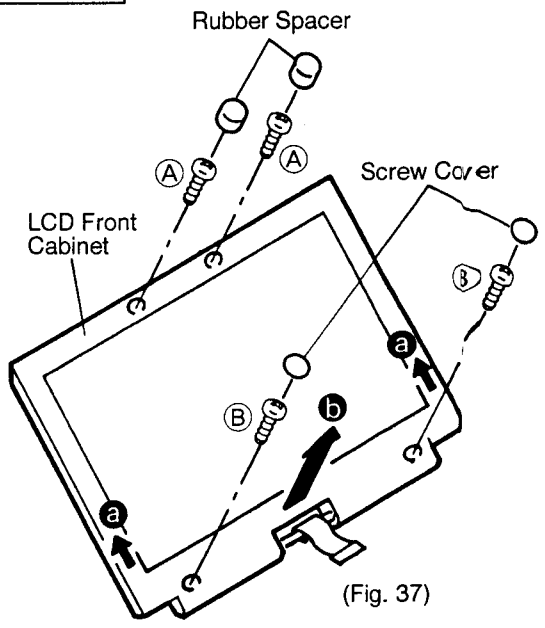
Procedure
Ref. 1 ➡ 7 ➡ 8 ➡ 15

Step 1 Remove the two Screw Covers and two Rubber Spacers. (Fig. 37)

Step 2 Remove the two screws Ⓐ and two screws Ⓑ. (Fig. 37)

Step 3 Slide the LCD Front Cabinet in the direction of arrow ⓐ, then remove it in the direction of arrow ⓑ.

Ⓐ	K105		ϕ2.6×6 mm (Silver)
Ⓑ	K109		ϕ2.6×7 mm (Gold)



(Fig. 37)

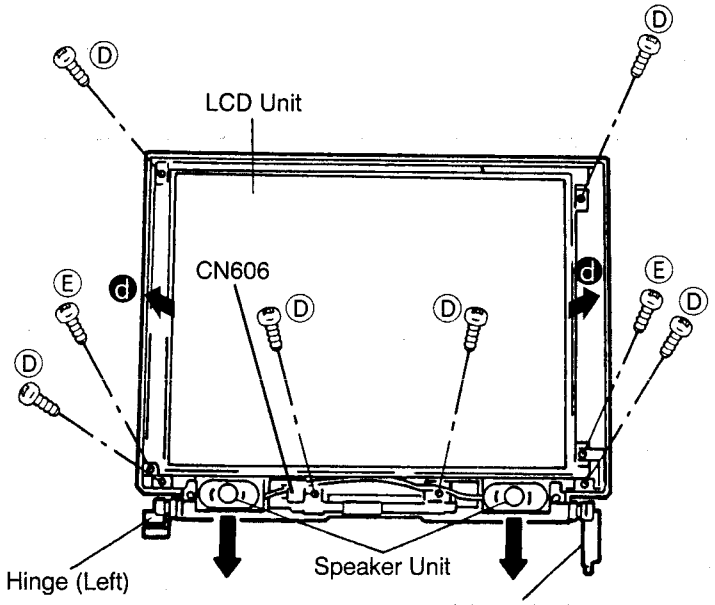
Step 4 Remove the six screws Ⓓ and two screws Ⓔ. (Fig. 38)

Step 5 Remove the hinges (right) and (left). (Fig. 38)

Step 6 Disconnect the Speaker Cable from CN606 and Remove the Speaker Unit. (Fig. 38)

Step 7 Remove the LCD Unit, Inverter P.C.B. and LCD FPC from LCD Rear Cabinet in the direction of arrow ⓓ. (Fig. 38)

Ⓓ	K109		ϕ2.6×7 mm (Gold)
Ⓔ	K110		ϕ2.6×8 mm (Black)



(Fig. 38)

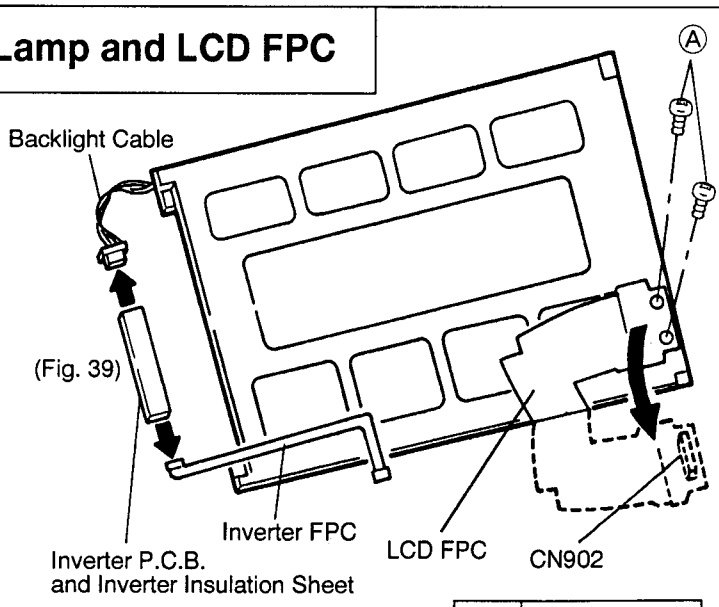
Ref. No. 16 Removing Backlight Lamp and LCD FPC

Procedure
Ref. 1 ➡ 7 ➡ 8 ➡ 15 ➡ 16

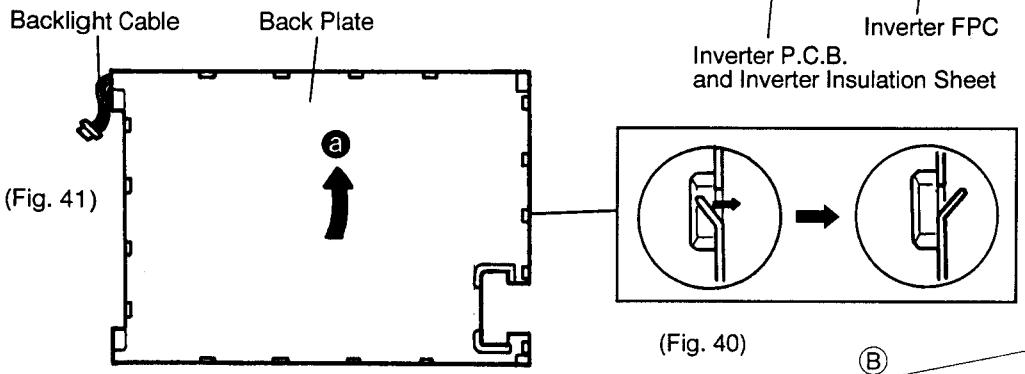
Step 1 Remove the two screws Ⓐ. (Fig. 39)

Step 2 Disconnect the CN902 from LCD Unit. (Fig. 39) Remove the LCD FPC.

Step 3 Disconnect the Backlight Cable, Inverter P.C.B. and Inverter Insulation sheet from Inverter P.C.B. (Fig. 39)



(Fig. 39)



(Fig. 41)

(Fig. 40)

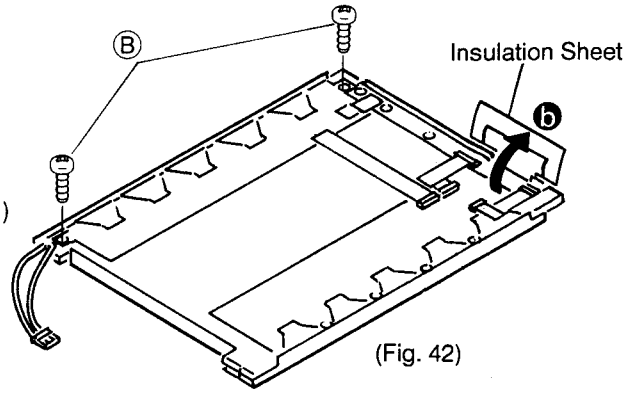
Ⓐ	K104
	ϕ2×3 mm (Silver)

Step 4 Bend the claws at the 17 locations with a plier toward outer side. (Fig. 40)

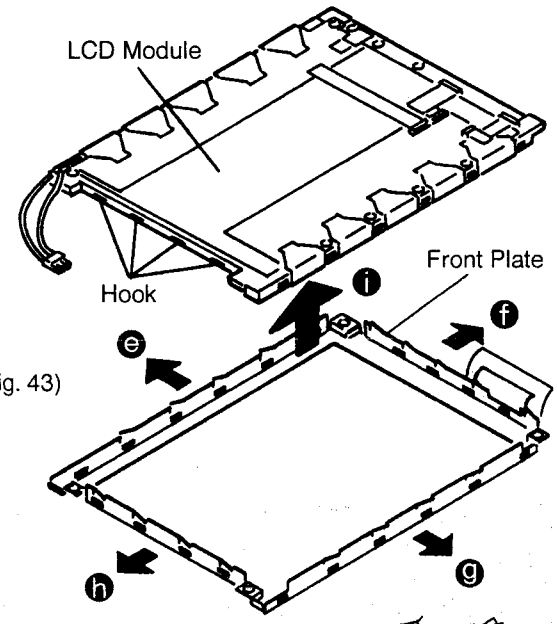
Step 5 Remove the Back Plate in the direction of arrow ⓐ. (Fig. 41)

Step 6 Remove the two screws Ⓑ. (Fig. 42)

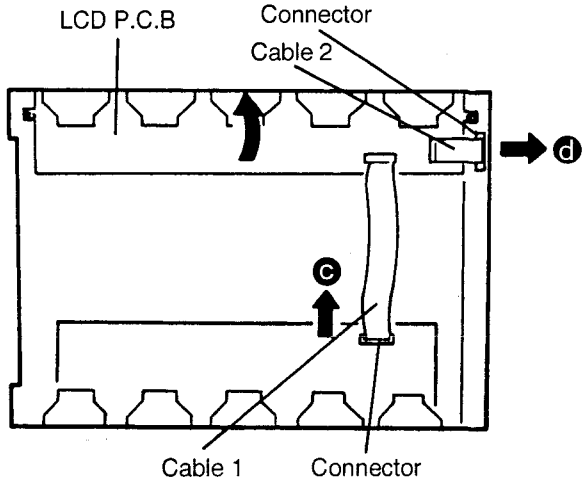
Step 7 Open the Insulation sheet in the direction of arrow ⓑ. (Fig. 42)



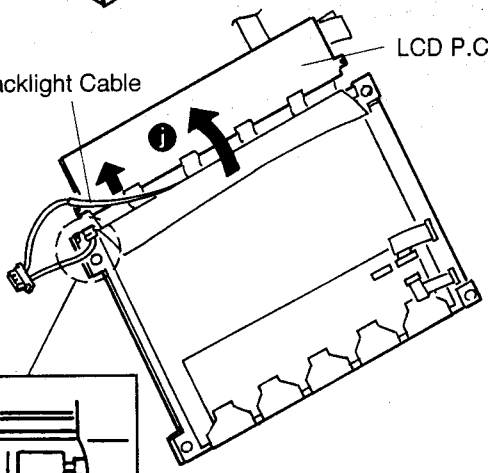
(Fig. 42)



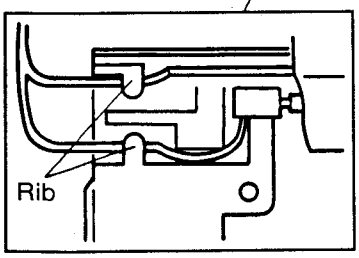
(Fig. 43)



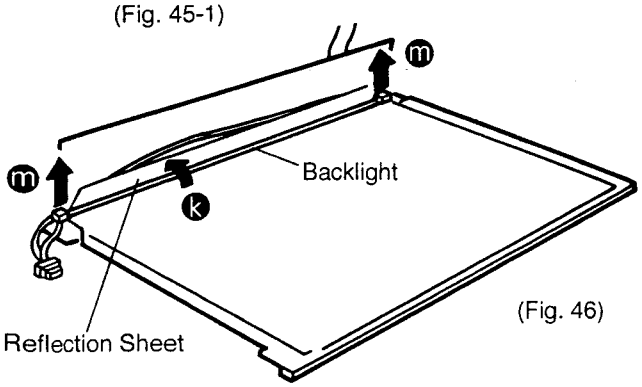
(Fig. 44)



(Fig. 45)



(Fig. 45-1)



(Fig. 46)

Step 8 Release the twenty hooks in the direction of arrow ⓔ, ⓕ, ⓖ, ⓗ.
Remove the LCD Module in the direction of arrow ⓘ. (Fig. 43)

Step 9 Disconnect the cable 1 in the direction of arrow ⓑ. (Fig. 44)

Step 10 Disconnect the cable 2 in the direction of arrow ⓓ. (Fig. 44)

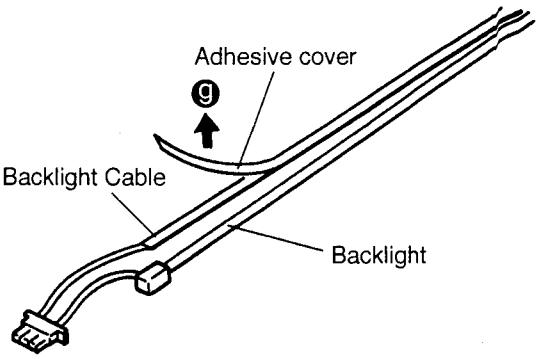
Step 11 Lift the LCD P.C.B. in the direction of the arrow ⓙ. (Fig. 45)

Step 12 Remove the Backlight Cable from Rib. (Fig. 45-1)

Step 13 Remove the Backlight Cable. (Fig. 45)

Step 14 Open the reflection sheet in the direction of arrow ⓚ. (Fig. 46)

Step 15 Remove the Backlight in the direction of arrow ⓜ. (Fig. 46)

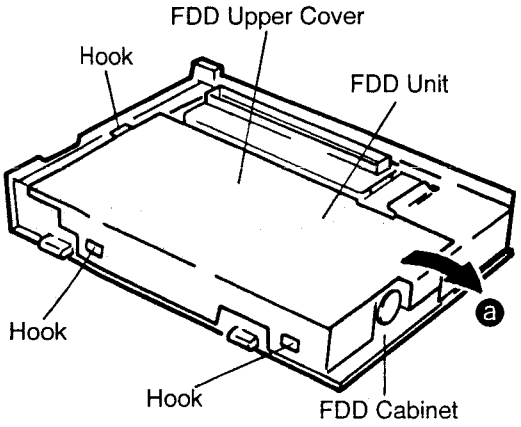


Notes When Assembling

Remove the adhesive cover from the Backlight cable before assembling.

Ref. No. 17 Removing FDD

Procedure
Ref. 1 ➡ 17



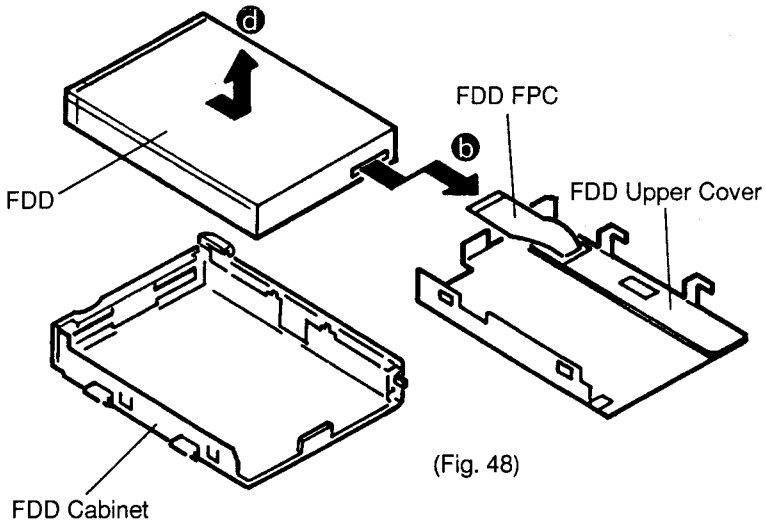
(Fig. 47)

Step 1 Release the three hooks. (Fig. 47)

Step 2 Remove the FDD Upper Cover in the direction of arrow ⓐ. (Fig. 47)

Step 3 Remove the FDD FPC in the direction of arrow ⓑ. (Fig. 48)

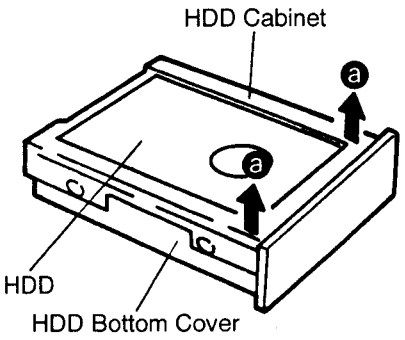
Step 4 Remove the FDD in the direction of the arrow ⓓ from FDD Cabinet. (Fig. 48)



(Fig. 48)

Ref. No. 18 Removing HDD

Procedure
Ref. 2 ➡ 18



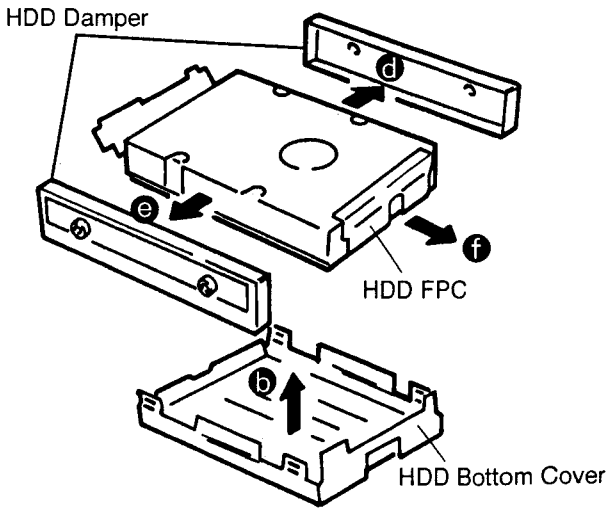
(Fig. 49)

Step 1 Remove the HDD Cabinet in the direction of arrow ⓐ. (Fig. 49)

Step 2 Remove the HDD in the direction of arrow ⓑ from HDD Bottom Cover. (Fig. 50)

Step 3 Remove the HDD Damper in the direction of arrows ⓓ and ⓔ from HDD. (Fig. 50)

Step 4 Disconnect the HDD FPC in the direction of arrow ⓕ from HDD. (Fig. 50)



(Fig. 50)

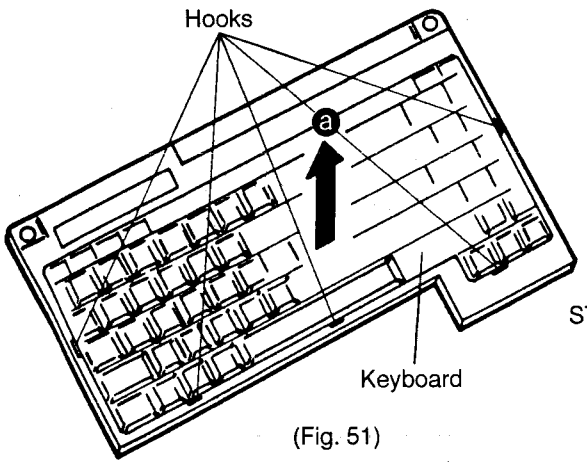
Ref. No. 19 Removing Keyboard and STATUS LCD

Procedure
Ref. 7 ➡ 19

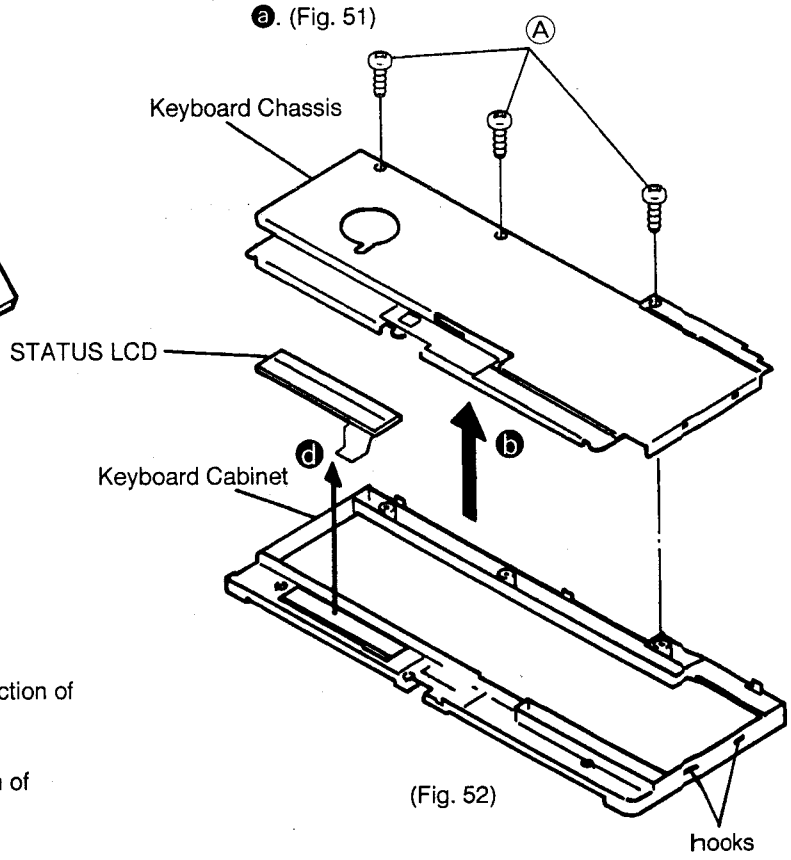
Ⓐ	K108		ϕ2.6×6 mm (Gold)

Step 1 Release the five hooks. (Fig. 51)

Step 2 Remove the Keyboard in the direction of arrow ⓐ. (Fig. 51)



(Fig. 51)



(Fig. 52)

Step 3 Remove the three screws Ⓐ. (Fig. 52)

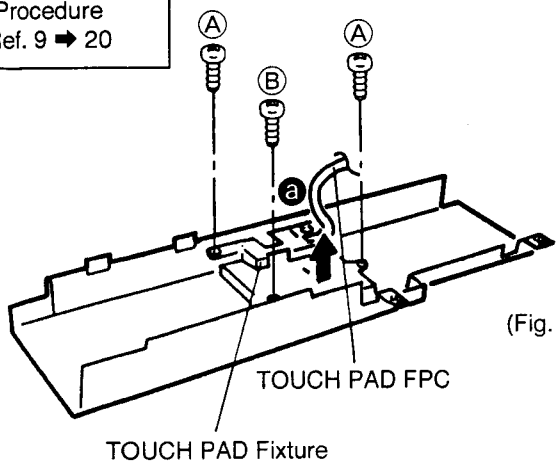
Step 4 Release the six hooks. (Fig. 52)

Step 5 Remove the Keyboard Chassis in the direction of arrow ⓑ. (Fig. 52)

Step 6 Remove the STATUS LCD in the direction of arrow ⓓ. (Fig. 52)

Ref. No. 20 Removing TOUCH PAD

Procedure
Ref. 9 ➡ 20



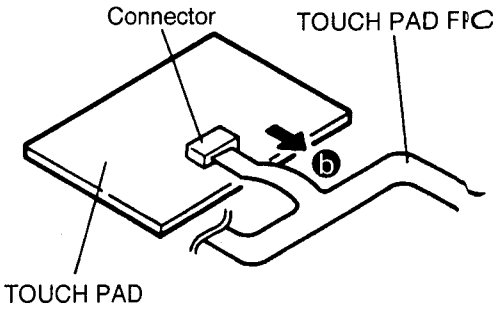
(Fig. 53)

Ⓐ	K102		ϕ2.6×8 mm (Black)
Ⓑ	K108		ϕ2.6×6 mm (Gold)

Step 1 Remove the screws Ⓐ and Ⓑ. (Fig. 53)

Step 2 Remove the TOUCH PAD Fixture in the direction of arrow ⓐ. (Fig. 53)

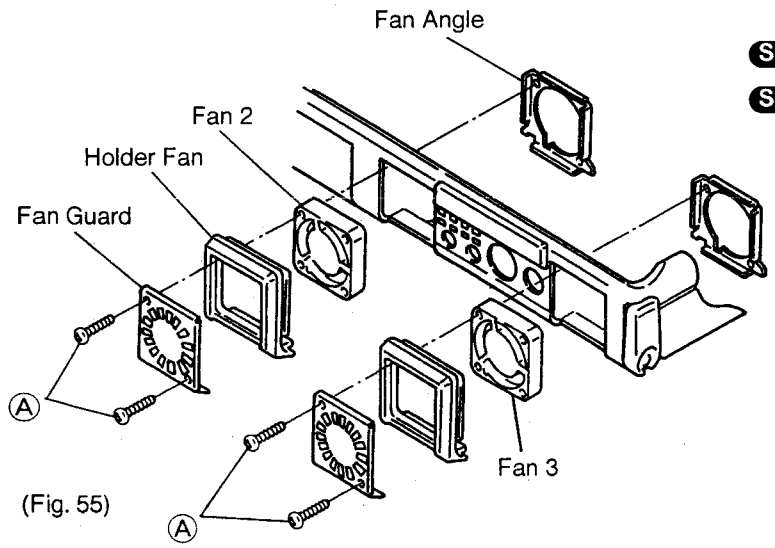
Step 3 Disconnect the TOUCH PAD FPC in the direction of arrow ⓑ from the Connector. (Fig. 54)



(Fig. 54)

Ref. No. 21 Removing Fan 2 and 3

Procedure
Ref. 1 ➡ 2 ➡ 3 ➡ 7 ➡ 8 ➡ 9 (Step 5 ➡ 8) ➡ 10 ➡ 11 ➡ 12 ➡ 13 ➡ 14 ➡ 21



(Fig. 55)

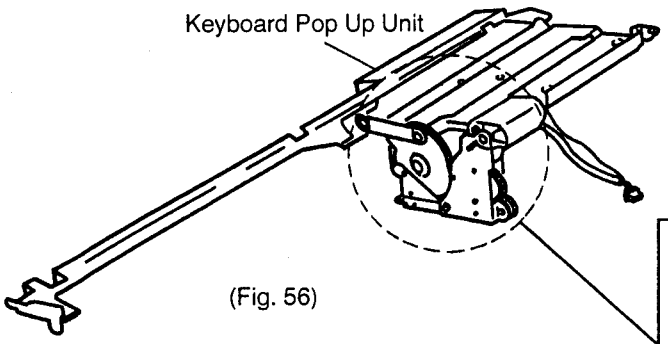
Step 1 Remove the four screws. (Fig. 55)

Step 2 Remove the Fan 2, 3. (Fig. 55)

Ⓐ	K110		ϕ2.6×8 mm (Black)

Ref. No. 22 Removing Motor Ass'y and Gear (Keyboard Pop Up Unit)

Procedure
Ref. 9 ➡ 10 ➡ 22



(Fig. 56)

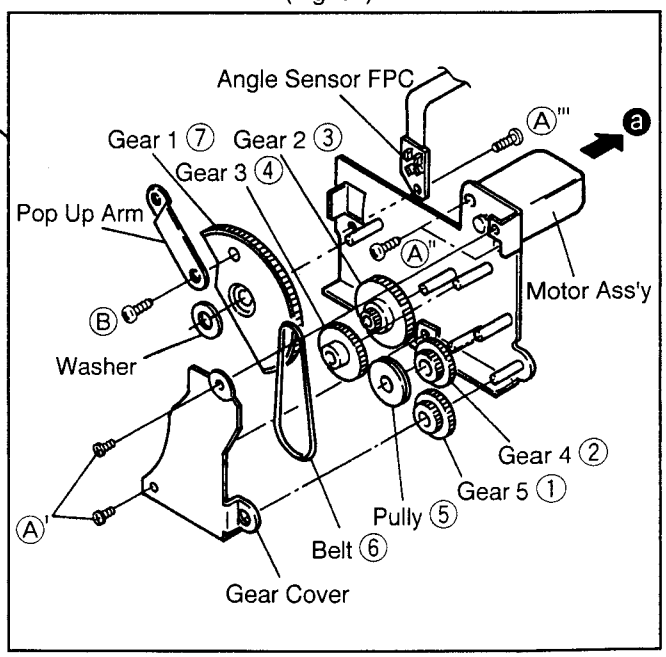
Step 1 Remove the screw Ⓑ. (Fig. 57)

Step 2 Remove the two screws Ⓐ'. (Fig. 57)

Step 3 Remove the Washer, Pop Up Arm, Gear 1~5, Pully and Belt. (Fig. 57)

Step 4 Remove the two screws Ⓐ". (Fig. 57)

(Fig. 57)



Step 5 Remove the Motor Ass'y in the direction of arrow a. (Fig. 57)

Step 6 Remove the screw Ⓐ'''. (Fig. 57)

Step 7 Remove the Angle Sensor FPC. (Fig. 57)

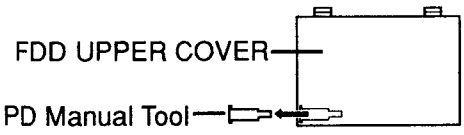
Notes When Assembling

Assemble the gears, pully and the belt in the order of ①~⑥ shown in Fig. 57.

Ⓐ	K104		ϕ2×3 mm (Silver)
Ⓑ	K111		ϕ1.7×3 mm (Black)

Ref. No. 23 Manually openig the PD Drive (if the PD Drive Tray will not open or close)

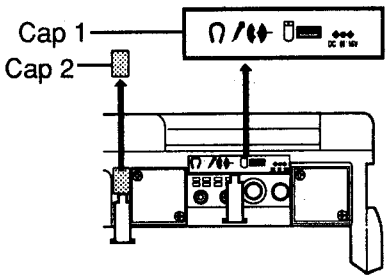
If the PD drive tray will no longer open or close because the battery is dead, or the like, follow the procedure below to open or close the tray manually.



Step 1 Remove the FDD Pack (Ref.No. 1)

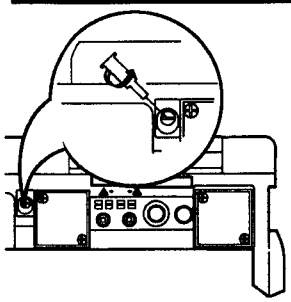
Step 2 Remove the PD Manual Tool.

Note:
Do not ship this unit without closing the keyboard.The LCD screen and the main unit may be damaged.



Step 3 Remove the Cap1 and Cap2.

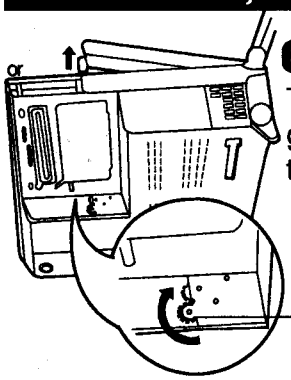
If the PD Drive Tray will not close



Step 4
Use the PD Manual Tool to turn the screw as far as it will go in the direction indicated in the diagram.

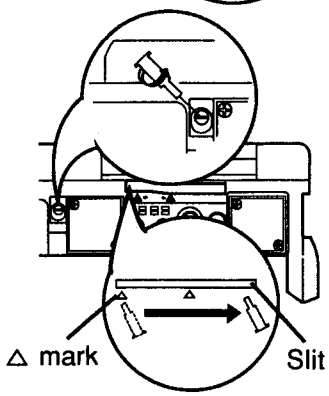
CAUTION:
Applying too much force to the tray could cause it to break.

If the PD Drive Tray will not open

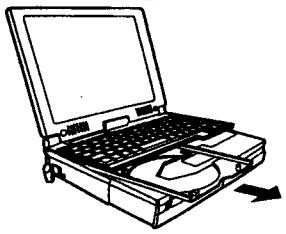


Step 4
Turn the Gear 5 as far as it will go in the direction indicated in the diagram.

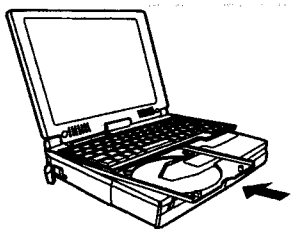
Step 5
Use the PD Manual Tool to turn the screw as far as it will go in the direction indicated in the diagram.



Step 6
Insert the PD Manual Tool into the slit near the △ mark and slide it as shown. Remove the tool.

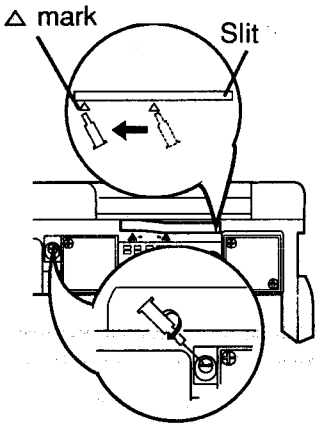


Step 7
Carefully pull out the tray.



Step 8

Carefully insert the tray to the end.

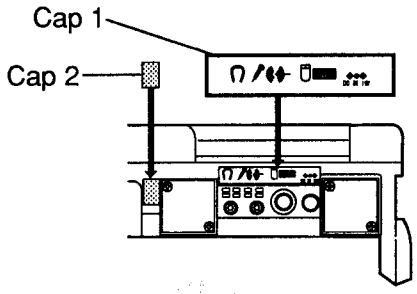


Step 9

Insert the PD Manual Tool into the slit near the △ mark and slide it in as shown in the diagram. Remove the tool.

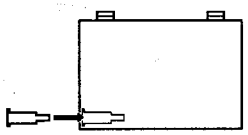
Step10

Use the PD Manual Tool to turn the screw as far as it will go in the direction indicated in the diagram.



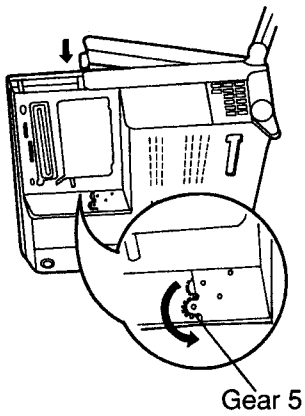
Step11

Replace the Cap 1 and Cap 2 as they were before.



Step12

Replace the PD Manual Tool in the FDD Upper Cover as it was before.



Step13

Turn the Gear 5 as far as it will go in the direction indicated in the diagram.

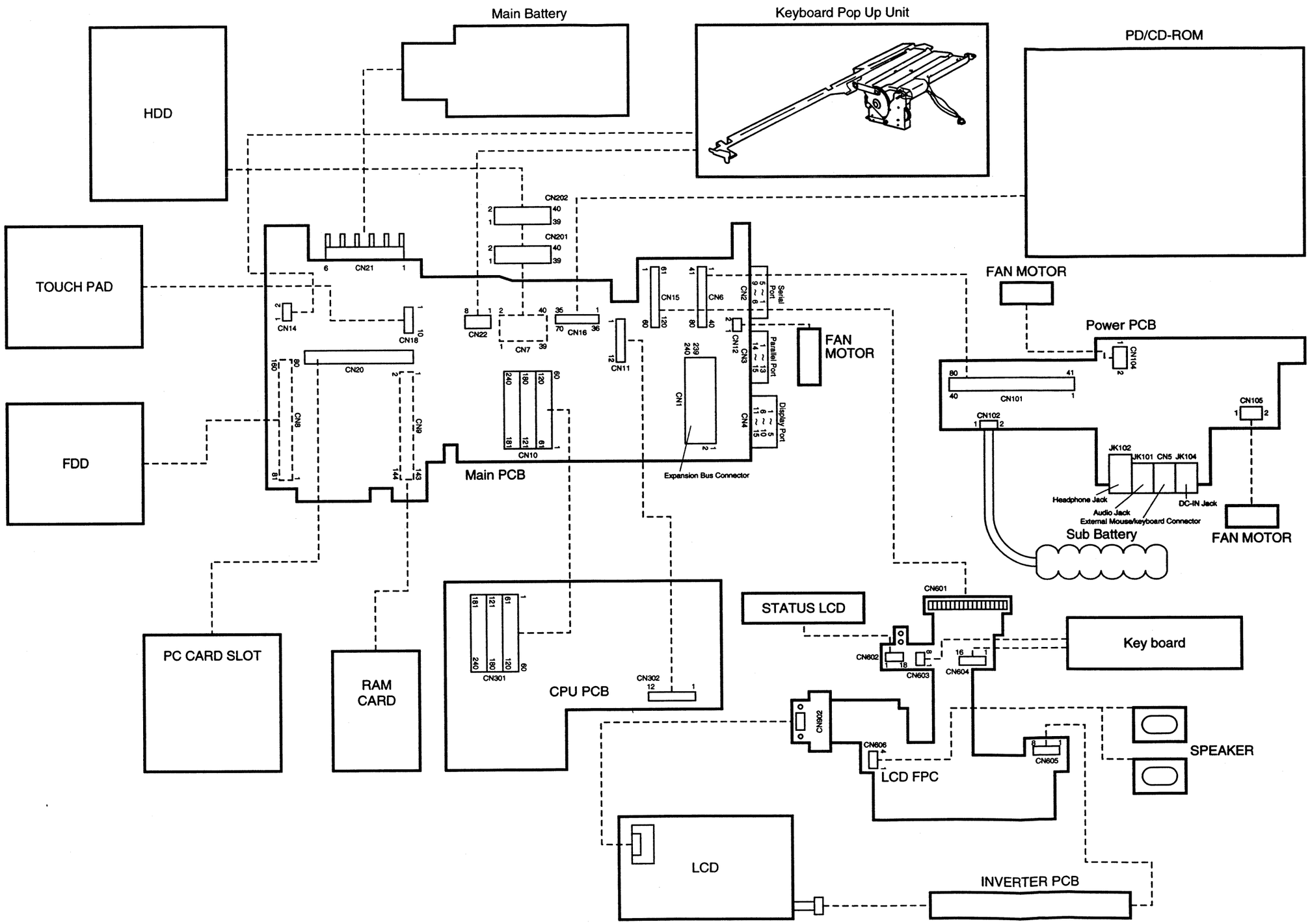
Step14

Mount the FDD Pack.

Step15

If a problem persists, send the computer to the Panasonic Service Center.

8. Wiring Connection Diagram



9. I/O address map

1) System

Address	Function	IC No.
0H	DMA Channel 0 base and current address	IC9
1H	DMA Channel 0 base and word count	IC9
2H	DMA Channel 1 base and current address	IC9
3H	DMA Channel 1 base and word count	IC9
4H	DMA Channel 2 base and current address	IC9
5H	DMA Channel 2 base and word count	IC9
6H	DMA Channel 3 base and current address	IC9
7H	DMA Channel 3 base and word count	IC9
8H	Command Register, DMA Controller 1	IC9
9H	Request Register, DMA Controller 1	IC9
0AH	Mask Register, DMA Controller 1	IC9
0BH	Mode Register, DMA Controller 1	IC9
0CH	Clear byte pointer, DMA Controller 1	IC9
0DH	Master Clear, DMA Controller 1	IC9
0DH	Temporary Register, DMA Controller 1	IC9
0FH	Write all Mask Register Bits, DMA Controller 1	IC9
0EH	Clear Mask Register, DMA Controller 1	IC9
20H	Initialization Control Word ICW1, Interrupt Controller 1	IC9
21H	Initialization Control Word ICW2, Interrupt Controller 1	IC9
21H	Initialization Control Word ICW3, (Master Device) Interrupt Controller 1	IC9
21H	Initialization Control Word ICW3, (Slave Device) Interrupt Controller 1	IC9
21H	Initialization Control Word ICW4, Interrupt Controller 1	IC9
21H	Operation Control Word OCW1, Interrupt Controller 1	IC9
20H	Operation Control Word OCW2, Interrupt Controller 1	IC9
20H	Operation Control Word OCW3, Interrupt Controller 1	IC9
24H	AT Core Logic Index Register	IC9
26H	AT Core Logic Data Register	IC9
40H	Timer Counter 1 Channel 0 count	IC9
41H	Timer Counter 1 Channel 1 count	IC9
42H	Timer Counter 1 Channel 2 count	IC9
43H	Timer Counter 1 Command Register	IC9
48H	Timer Counter 2 Channel 0 count	IC9
4AH	Timer Counter 2 Channel 2 count	IC9
4BH	Timer Counter 2 Command Register	IC9
60H	Keyboard Controller data I/O input buffer	IC9
60H	Keyboard Controller data I/O output buffer	IC9
61H	Port 61	IC9
64H	Keyboard Controller Command	IC9
64H	Keyboard Controller Status	IC9
70H	CMOS RAM Address port and NMI Mask	IC9
71H	RTC CMOS RAM data port	IC9
80H	Reserved	IC9
81H	DMA Memory Address Mapper Page Register Channel 2	IC9
82H	DMA Memory Address Mapper Page Register Channel 3	IC9
83H	DMA Memory Address Mapper Page Register Channel 1	IC9
84H	Reserved	IC9
85H	Reserved	IC9
86H	Reserved	IC9
87H	DMA Memory Address Mapper Page Register Channel 0	IC9
88H	Reserved	IC9

Continued

Address	Function	IC No.
89H	DMA Memory Address Mapper Page Register Channel 6	IC9
8AH	DMA Memory Address Mapper Page Register Channel 7	IC9
8BH	DMA Memory Address Mapper Page Register Channel 5	IC3
8CH	Reserved	IC9
8DH	Reserved	IC9
8EH	Reserved	IC9
8FH	DMA Memory Address Mapper Page Register - Refresh	IC9
92H	Port 92	IC9
0A0H	Initialization Control Word ICW1, Interrupt Controller 2	IC9
0A1H	Initialization Control Word ICW2, Interrupt Controller 2	IC9
0A1H	Initialization Control Word ICW3, (Master Device) Interrupt Controller 2	IC9
0A1H	Initialization Control Word ICW3, (Slave Device) Interrupt Controller 2	IC9
0A1H	Initialization Control Word ICW4, Interrupt Controller 2	IC9
0A1H	Operation Control Word OCW1, Interrupt Controller 2	IC9
0A0H	Operation Control Word OCW2, Interrupt Controller 2	IC9
0A0H	Operation Control Word OCW3, Interrupt Controller 2	IC9
0B0H	Power Management Register	IC9
0B2H	Power Management Register	IC9
0C0H	DMA Channel 4 base and current address	IC9
0C2H	DMA Channel 4 base and current word count	IC9
0C4H	DMA Channel 5 base and current address	IC9
0C6H	DMA Channel 5 base and current word count	IC9
0C8H	DMA Channel 6 base and current address	IC9
0CAH	DMA Channel 6 base and current word count	IC9
0CCH	DMA Channel 7 base and current address	IC9
0CEH	DMA Channel 7 base and current word count	IC9
0D0H	Command Register, DMA Controller 2	IC9
0D0H	Status Register, DMA Controller 2	IC9
0D2H	Request Register, DMA Controller 2	IC9
0D4H	Mask Register, DMA Controller 2	IC9
0D6H	Mode Register, DMA Controller 2	IC9
0D8H	Clear byte pointer, DMA Controller	IC9
0DAH	Master Clear, DMA Controller 2	IC9
0DAH	Temporary Register, DMA Controller 2	IC9
0DCH	Clear Mask Register, DMA Controller 2	IC9
0DEH	Write all Mask Register Bits, DMA Controller 2	IC9
0194H	APMC Index Register	IC65
0195H	APMC Data Register	IC65
0196H	G/A Index Register	IC56
0197H	G/A Data Register	IC56

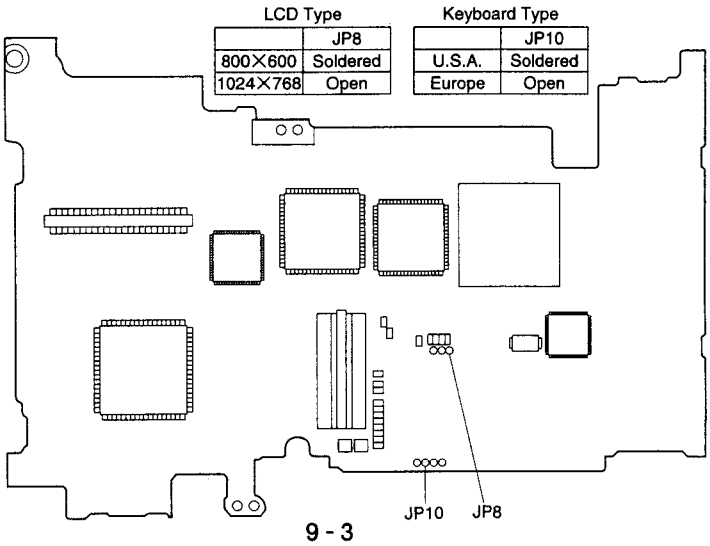
2) Peripherals

Address	Function	IC No.
220H–22FH or 230H–23FH or 240H–24FH or 250H–25FH	Sound Chip	IC77
278H–27AM	LPT3	IC52
1000H–103FH (Changeable)	SCSI	IC47

Continued

Address	Function	IC No.
2E8H–2EFH	Serial Port 4	IC52
2F8H–2FFH	Serial Port 2 or IrDA	IC52
378H–37AH	LPT2	IC52
388H–38BH	Sound Chip	IC77
398H	Super I/O Index Register	IC52
399H	Super I/O Data Register	IC52
3B4H	CRTC Index MP	IC26
3B5H	CRTC Data MP	IC26
3BCH–3BEH	LPT1	IC52
3C1H	Attribute Controller Data in VGA, Attribute Controller Data in EGA	IC26
3C2H	Miscellaneous Output, Feature	IC26
3C3H	Motherboard Sleep Address	IC26
3C4H	Sequencer	IC26
3C5H	Sequencer	IC26
3C6H	RAMDAC Pixel Mask	IC26
3C7H	RAMDAC Address Register Read Mode, RAMDAC Status Register	IC26
3C8H	RAMDAC Address Register Write Mode	IC26
3C9H	RAMDAC Data	IC26
3CAH	Feature Control	IC26
3CCH	Miscellaneous Output	IC26
3CEH	Graphic Controller and Extensions Index	IC26
3CFH	Graphic Controller and Extensions Data	IC26
3D4H	CRTC Index	IC26
3D5H	CRTC Data	IC26
3DAH	Feature Control, Display Status	IC26
3E0H	PCMCIA Index Register	IC38
3E1H	PCMCIA Data Register	IC38
3E2H	PCMCIA Index Register for Port Replicator	IC38
3E3H	PCMCIA Data Register for Port Replicator	IC38
3E8H	Serial Controller Port 3 Receiver Buffer	IC44
3E8H–3FFH	Serial Port 3	IC52
3F2H	Floppy Disk Controller Digital Output Register	IC52
3F4H	Floppy Disk Controller Main Status Register	IC52
3F5H	Floppy Disk Controller Data Register	IC52
3F6H	Fixed Disk Register	IC52
3F7H	Floppy Disk Controller Digital Input Register	IC52
3F7H	Floppy Disk Controller Control Register	IC52
3F7H	Fixed Disk Decode	IC52
3F8H–3FFH	Serial Port 1	IC52
678H–67FH	LPT3	IC52
778H–77FH	LPT2	IC52

10. Jumper Setting for LCD and Keyboard type

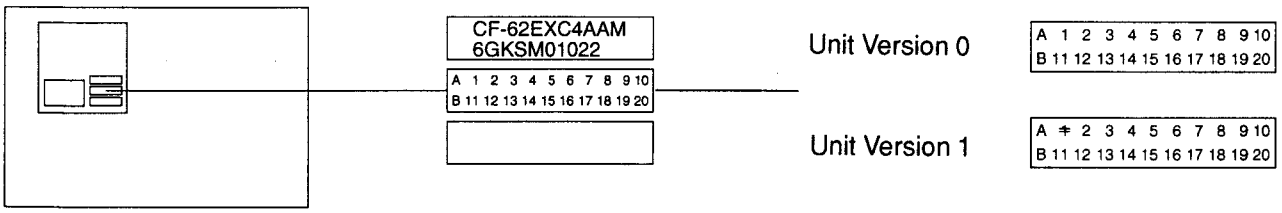


11. P.C.B. Change History

CF-62 P.C.B. Change Record			
Production Q'ty	1750	400	
Unit Version	0		1
Main P.C.B. P/N	DL3U10814AAA	← same	← same
Version	0	1	2
		EMI improvement	APMC improvement
Compatibility	◄⊖►	◄⊖	/►
Power P.C.B. P/N	DL3U20814AAA	DL3U20814AAB	← same
Version	0		
		Temperature Sensor P.C.B. integrated	
Compatibility	Together with Temp. Sensor P.C.B. ◄⊖►		

11.1 Unit Version

(Bottom Cabinet)

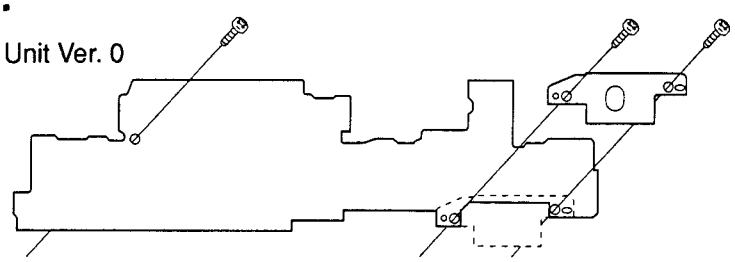


11.2 Main P.C.B.

DL3U10814AAA Ver. 0 and Ver. 1 are not supplied as replacement parts.
Use DL3U10814AAA Ver. 2.

11.3 Power P.C.B.

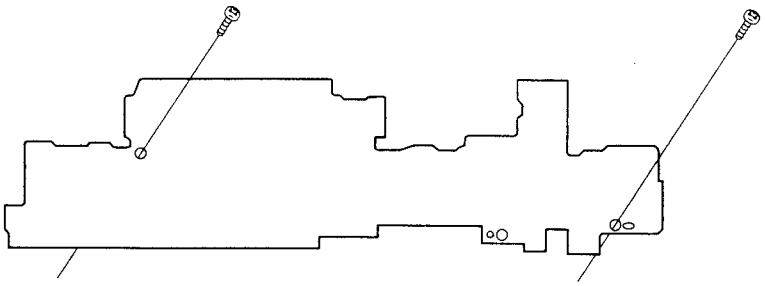
1. DL3U20814AAA for Unit Ver. 0



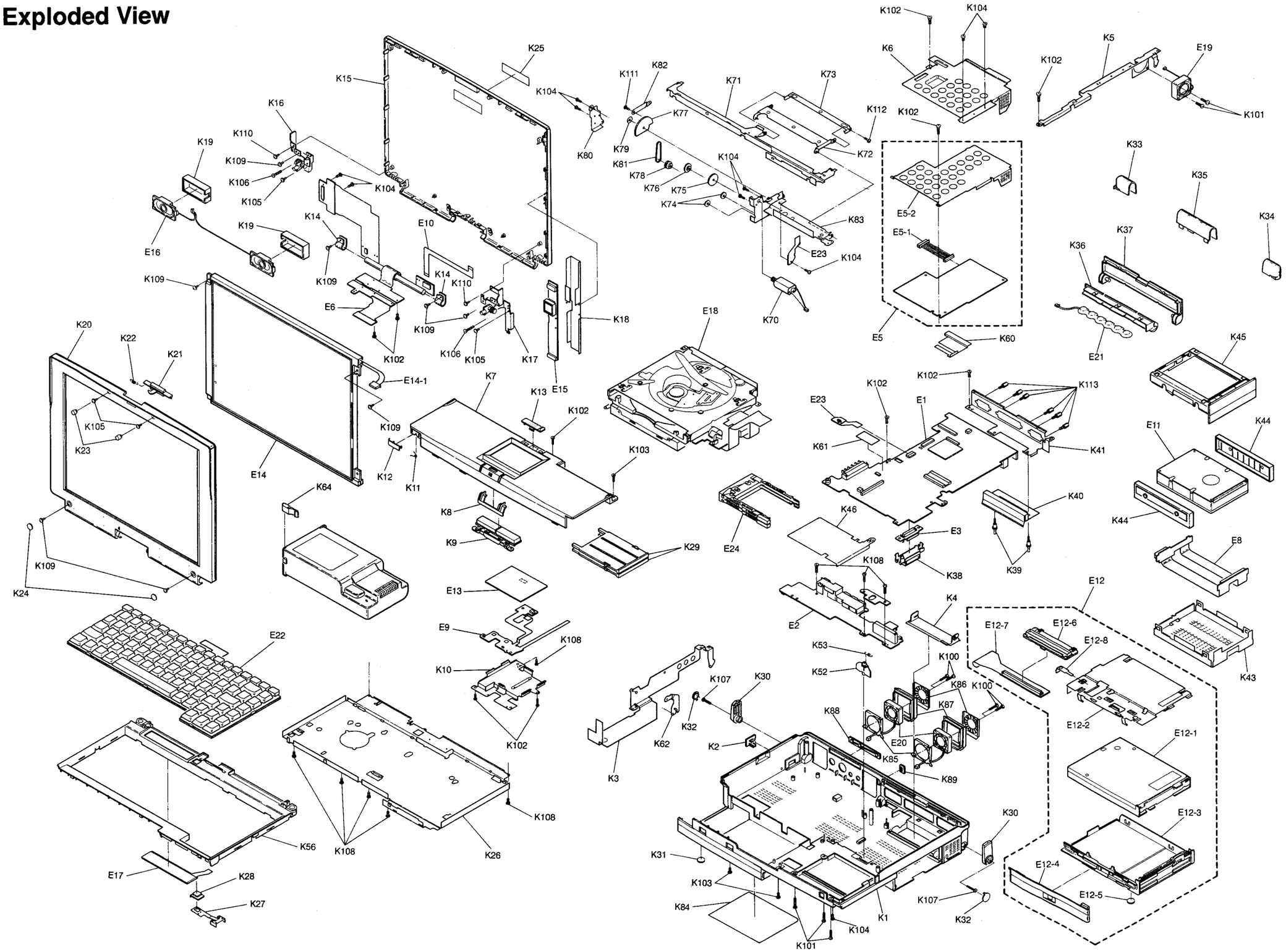
* This Power P.C.B. and Temperature Sensor P.C.B. are not supplied as replacement parts. Replace them with a DL3U20814AAB.

2. DL3U20814AAB

The Temperature Sensor P.C.B. is integrated in the Power P.C.B. DL3U20814AAB.



12. Exploded View



12 - 1

12 - 2

13. Quick Reference for Screws

REF.NO.	PART NO.	ACTUAL SIZE	REF.NO.	PART NO.	ACTUAL SIZE
K100	XQN2+A8FZ	ϕ2×8mm (Black)	K107	XYN26+F12	ϕ2.6×12mm (Gold)
K101	XSB2+14FN	ϕ2×14mm (Silver)	K108	XTB26+6G	ϕ2.6×6mm (Gold)
K102	XTB26+8GFZ	ϕ2.6×8mm (Black)	K109	XYN26+J7	ϕ2.6×7mm (Gold)
K103	XTB26+10GFZ	ϕ2.6×10mm (Black)	K110	XYN26+C8FZ	ϕ2.6×8mm (Black)
K104	DFHE5025ZA	ϕ2×3mm (Silver)	K111	DFHE5061ZA	ϕ1.6×3mm (Black)
K105	XYN26+J6FN	ϕ2.6×6mm (Silver)	K112	DFHE5059ZA	ϕ2×3.5mm (Silver)
K106	XTB26+16G	ϕ2.6×16mm (Gold)	K113	DFHE5058ZA	ϕ2.5×7.8mm (Silver)
			K114	XSB2+12FZ	ϕ2×12mm (Black)

14. Replacement Parts List

(Mechanical, Accessories Packing and Electrical)

Notes: Important safety notice.
Components identified by ⚠ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's special parts.

REF.NO. and AREA		PART NO.	DISCRIPTION	QiTY
Accessories				
A1	(M,E)	DFQX2502ZA	MANUAL, USER'S GUIDE	1
A1	(G)	DFQX2503ZA	MANUAL, USER'S GUIDE	1
A1	(F)	DFQX2506ZA	MANUAL, USER'S GUIDE	1
A2	(G)	DFJA0032ZAKK	AC CABLE	1
A2	(M)	DFJA0033ZAKK	AC CABLE	1
A2	(E,F)	DFJA0035ZAKK	AC CABLE	1
A3	(M,E)	DFJN0619ZAE	BACK UP FD	1
A3	(G)	DFJN0620ZAE	BACK UP FD	1
A3	(F)	DFJN0621ZAE	BACK UP FD	1
A4	(M,E)	DFJN5052ZAZ	FIRST AID CD	1
A4	(G)	DFJN5053ZAZ	FIRST AID CD	1
A4	(F)	DFJN5054ZAZ	FIRST AID CD	1
Packing Materrial				
P1		DFPK0819ZA	CASE, PACKING	1
P2		DFPN0613ZA	CUSHION	4

REF.NO. and AREA		PART NO.	DESCRIPTION		Q'TY
Main Block Units					
E1		DL3U10814AAA	PCB, MAIN	RTL	1
E2		DL3U20814AAB	PCB, POWER	RTL	1
E3		DL3U30814AAA	PCB, HDD	RTL	1
E5		DL3UP0815BAA	PCB, CPU (CF-62E******)	RTL	1
E5		DL3UP0815AAA	PCB, CPU (CF-62C******)	RTL	1
E5-1		DFJS201ZA	CABLE, CPU		1
E5-2		DFWV65A0272	PLATE, RADIATION, CPU		1
E6		DFWV48C0348	ASS'Y, FPC, LCD		1
E8		DL3U30817AAA	FPC, HDD		1
E9		DL3U40817AAA	FPC, TOUCH PAD		1
E10		DFUP0837ZA	FPC, INVERTER (XGA) (CF-62*X*****)		1
E10		DFUP0838ZA	FPC, INVERTER (SVGA) (CF-62*J*****)		1
E11		DFJH050YA-T	HDD, 1.35GB (CF-62**C****)		1
E11		DFJH047ZA-S	HDD, 810MB (CF-62**8****)		1
E12		DFWV44K0024	ASS'Y, FDD		1
E12-1		EME279MF	FDD		1
E12-2		DFUA0168ZA	COVER, UPPER, FDD		1
E12-3		DFKF0153ZA-0	CABINET, FDD		1
E12-4		DFGP0172ZA-0	FDD LOCK BEZEL		1
E12-5 (K31)		DFHG310YA-0	RUBBER FOOT		1
E12-6		DFHR5354ZA	GUIDE, CONNECTOR, FDD		1
E12-7		DL3U20817AAA	FPC, FDD		1
E12-8		DFMD2083ZA	PD MANUAL TOOL		1
E13		DFJL0023ZA	TOUCH PAD		1
E14		DFADHLD1203	UNIT, LCD (CF-62*X*****)		1
E14		DFADHLD1201A	UNIT, LCD (CF-62*J*****)		1
E14-1		DFAC0024ZA	BACKLIGHT (CF-62*X*****)		1
E14-1		DFAC0025ZA	BACKLIGHT (CF-62*J*****)		1
E15		DFWP0065ZAV	PCB, INVERTER (XGA) (CF-62*X*****)		1
E15		DFWP0066ZAV	PCB, INVERTER (SVGA) (CF-62*J*****)		1
E16		EKX4A01A	UNIT, SPEAKER		1
E17		DFADHLC8929	STATUS LCD		1
E18		DFJD003ZAY	PD/CD-ROM DRIVE		1
E19		DFJQ026ZA	FAN 1		1
E20		DFJQ027ZA	FAN 2 and 3		2
E21		DFBA6/V60HS	SUB BATTERY (With Sponge)		1
E22	(M)	DFSX1A51ZATS	KEYBOARD		1
E22	(E)	DFSX1A52ZATS	KEYBOARD		1
E22	(G)	DFSX1A53ZATS	KEYBOARD		1
E22	(F)	DFSX1A54ZATS	KEYBOARD		1
E23		DFWV48C0347	FPC, ANGLE SENSOR		1
E24		DFJP081ZA136	CONNECTOR, PC CARD SLOT		1

REF.NO. and AREA	PART.NO.	DESCRIPTION	QiTY
Mechanical Parts			
K1	DFWV80C0357	CABINET, BOTTOM	1
K2	DFBD0078ZA-0	KNOB, POWER SWITCH	1
K3	DFMD2076ZA	FIXTURE, HINGE (L)	1
K4	DFKE0321ZA-0	COVER, EXPANSION BUS	1
K5	DFMD1078ZA	FIXTURE, HINGE (R)	1
K6	DFUA0170ZA	PLATE, RADIATION CPU	1
K7	DFKM0203ZA-0	CABINET, PALM REST	1
K8	DFGL0049ZA	LENS, LED	1
K9	DFBC0161ZA-0	BUTTON, TOUCH PAD	1
K10	DFMD7292ZA	FIXTURE, TOUCH PAD	1
K11	DFUW0060ZA	SPRING, BATTERY PACK RELEASE BUTTON	1
K12	DFBD0082ZA-0	BATTERY PACK RELEASE BUTTON	1
K13	DFBD0080ZA-0	PD/CD EJECT BUTTON	1
K14	DFHR5360ZA	HOLDER, FPC	2
K15	DFKM0204ZA-0	CABINET, LCD, REAR	1
K16	DFBH1056ZA	HINGE (LEFT)	1
K17	DFBH1057ZA	HINGE (RIGHT)	1
K18	DFMX9005ZA	SHEET, INSULATION, INVERTER (CF-62*X*****)	1
K18	DFMX9006ZA	SHEET, INSULATION, INVERTER (CF-62*J*****)	1
K19	DFHG1011ZA-0	HOLDER, SPEAKER	2
K20	DFKF0154ZA-0	CABINET, LCD, FRONT	1
K21	DFBC0163ZA-0	LCD LOCK	1
K22	DFUW0054ZA	SPRING, LCD LOCK	1
K23	DFHG1012ZA-0	SPACER, RUBBER	2
K24	DFGX0165ZA-0	COVER, SCREW	2
K25	DFGB0043ZA-1	LOGO BADGE	1
K26	DFUA8016ZA	CHASSIS, KEYBOARD	1
K27	DFUS0214ZA	SPRING, OPEN/CLOSE SWITCH LCD	1
K28	DFBD0083ZA-0	KNOB, OPEN/CLOSE SWITCH LCD	1
K29	DFGE0023ZA-0	SPACER, PC CRAD SLOT	2
K30	DFKE0326ZA-0	TILT STAND	2
K31	DFHG310YA-0	RUBBER, FOOT	1
K32	DFHG342ZA	CAP, RUBBER	2
K33	DFKE0323ZA-0	COVER, HINGE (LEFT)	1
K34	DFKE0338ZA-0	COVER, HINGE (RIGHT)	1
K35	DFKE0325ZA-0	COVER, CENTER	1
K36	DFKE0339ZA-0	COVER, SUB BATTERY	1
K37	DFKE0324ZA-0	COVER, CONNECTOR	1
K38	DFHR5351ZA	HOLDER, HDD CONNECTOR	1
K39	DFDF3096ZA	PIN, BUS GUIDE	2
K40	DFMC0376ZA	PLATE, SHIELD, BUS	1
K41	DFUA0172ZA	ANGLE, CONNECTOR	1
K43	DFWV78A0038	COVER, BUTTON, HDD	1
K44	DFHG1009ZA	DAMPER, HDD	2
K45	DFWV78A0039	CABINET, HDD	1
K46	DFMX0430ZA	SHEET, INSULATION, PC CARD	1

REF.NO. and AREA	PART NO.	DESCRIPTION	QiTY
K52	DFBD0084ZA-0	LEVER, LOCK, HDD	1
K53	DFUW0054ZA	SPRING, LOCK, HDD	1
K56	DFKM0202ZA-0	CABINET, KEYBOARD	1
K60	DFMX0436ZA	SHHET, INSULATION, FPC	1
K61	DFMX0442ZA	SHEET, INSULATION, GEAR	1
K62	DFDA0011ZA	CRANK ARM, KEYBOARD	1
K64	DFBS0033ZA-0	HOOK, BATTERY PACK LOOK	1
K66	DFMX0425ZA	SHEET, INSULATION, LCD	1
K70	DFWV31A0049	ASS'Y, MOTOR	1
K71	DFMD1079ZA	CRANK, KEYBOARD	1
K72	DFMD2082ZA	POP UP ANGLE1, KEYBOARD	1
K73	DFMD2081ZA	POP UP ANGLE2, KEYBOARD	1
K74	DFDG5652ZA	GEAR4, 5	2
K75	DFDG5650ZA	GEAR2	1
K76	DFDG5651ZA	GEAR3	1
K77	DFDG5649ZA	GEAR1	1
K78	DFDP0009ZA	PULLEY	1
K79	DFNW2602ZA	WASHER	1
K80	DFMD4012ZA	COVER, GEAR	1
K81	DFDV0012ZA	BELT	1
K82	DFDA0016ZA	POP UP ARM, KEYBOARD	1
K83	DFMD7293ZA	CHASSIS, GEAR, KEYBOARD	1
K84	DFGT0568ZA	RATING LABEL	1
K85	DFMD2084ZA	ANGLE, FAN	2
K86	DFGG0004ZA	FAN GUARD	2
K87	DFHG1025ZA-0	HOLDER, FAN	2
K88	DFHG1022ZA-0	CAP 1	1
K89	DFHG1023ZA-0	CAP 2	1
K100	XQN2+A8FZ	SCREW	4
K101	XSB2+14FN	SCREW	3
K102	XTB26+8GFZ	SCREW	10
K103	XTB26+10GFZ	SCREW	3
K104	DFHE5025ZA	SCREW	10
K105	XYN26+J6FN	SCREW	4
K106	XTB26+16G	SCREW	2
K107	XYN26+F12	SCREW	2
K108	XTB26+6G	SCREW	9
K109	XYN26+J7	SCREW	8
K110	XYN26+C8FZ	SCREW	2
K111	DFHE5061ZA	SCREW	1
K112	DFHE5059ZA	SCREW	1
K113	DFHE5058ZA	SCREW	6
K114	XBS2+12FZ	SCREW	2

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Service Manual

Notebook Computer

CF-62

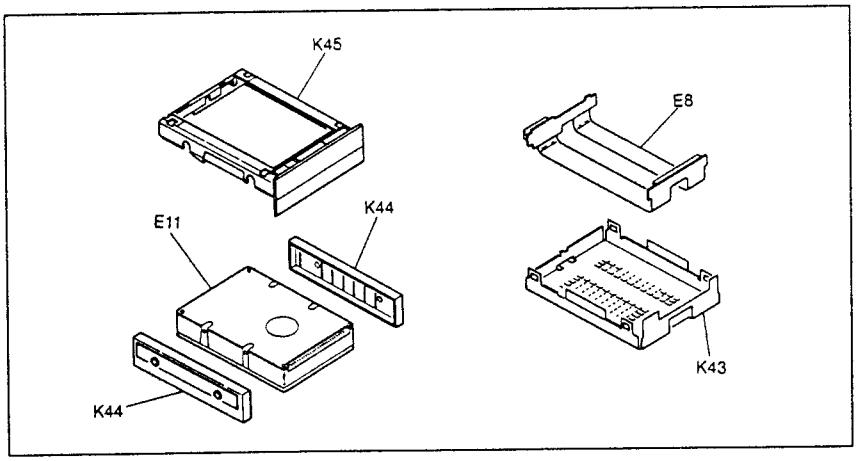
Supplement-1

Please file and use this manual together with the following Service Manual.
CF-62 Service Manual (Order No. CPD9607014-C0)

This is the Service Manual for the following areas.

M ...for U.S.A. and Canada
E ...for U.K.
G ...for Germany
F ...for France

Exploded View (Page 12-2)



Parts Comparison Table

REF. NO. and AREA	PART NO.		DESCRIPTION	Q'TY
	ORIGINAL	**NEW**		
Main Block Unit				
E11	DFJH050YA-T	DFJH058ZA-S	HDD, 1.35GB (CF-62**C****)	1
E11	DFJH047ZA-S	DFJH059ZA-S	HDD, 840MB (CF-62**8****)	1
Mechanical Parts				
K44	DFHG1009ZA	DFHG1021ZA	DAMPER, HDD	2
K45	DFWV78A0039	DFKE8103YA-0	CABINET, HDD	1

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Service Manual

Notebook Computer

CF-62

Supplement-2

Please file and use this manual together with the following Service Manuals.
CF-62 Service Manual (Order No. CPD9607014C0) for original CF-62 models,
CF-62 Technical Guide (Order No. CPD9609027G0)

This is the Service Manual for the following areas.

[M] ... for U.S.A. and Canada
[E] ...for U.K.
[G] ...for Germany
[F] ...for France

1. Parts Comparison Table

Note: Important safety notice.
Components identified by ⚠ mark have special characteristics important for safety.
When replacing any of these components,use only manufacturer's special parts.

REF. NO. and AREA	PART NO. ORIGINAL	PART NO. NEW	DESCRIPTION	Q'TY
Accessories				
A1 (M, E)	DFQX2502ZA	**DFQX2502ZB**	MANUAL, USER'S GUIDE	1
A2 ⚠ (E) (F)	DFJA0035ZAKK	**DFJA0035ZBKK** **DFJA0032ZAKK**	AC CABLE	1
Packing Materrial				
P1	DFPK0819ZA	**DFPK0819ZB**	CASE, PACKING	1
Main Block Unit				
E1 ⚠	DL3U10814AAA	**DFWV48C0376**	PCB, MAIN (CF-62*X*****) (XGA) RTL	1
E1 ⚠	DL3U10814BAA	**DFWV48C0377**	PCB, MAIN (CF-62*J*****) (SVGA) RTL	1
E12-4	DFGP0172ZA-0	**DFGP0172ZC-0**	FDD LOCK BEZEL	1
E13	DFJL0023ZA	**DFJL0023ZB**	TOUCH PAD	1
E19	DFJQ026ZA	**DFJQ026ZB**	FAN1	1
E20	DFJQ027ZA	**DFJQ027YA**	FAN 2 and 3	2
E24	DFJP081ZA136	**DFJP081XA136**	CONNECTOR, PC CARD SLOT	1
E25 (Addition)	————	**DFJM2005YAH**	UNIT, MICROPHONE	1
Mechanical Parts				
K7	DFKM0203ZA-0	**DFKM0203YA-0**	CABINET, PALM REST	1
K20	DFKF0154ZA-0	**DFKF0154ZD-0**	CABINET, LCD, FRONT	1
K37	DFKE0324ZA-0	**DFKE0324ZB-0**	COVER, CONNECTOR	1
K39	DFDF3096ZA	**DFDF3096YA**	PIN, BUS GUIDE	2
K64	DFBS0033ZA-0	**DFBS0033ZB-0**	HOOK, BATTERY PACK LOCK	1
K79	DFNW2602ZA	**DFNW3103ZA**	WASHER	1

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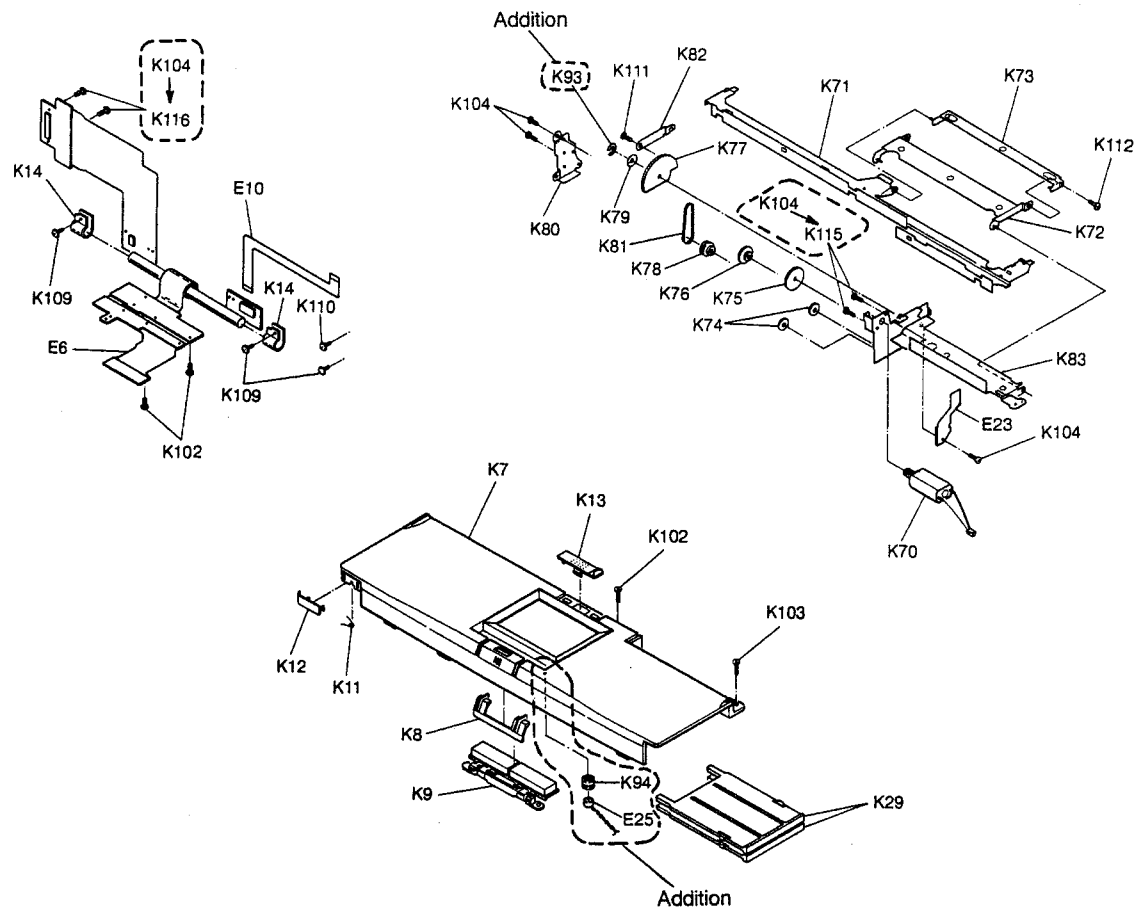
REF. NO. and AREA		PART NO. ORIGINAL	PART NO. NEW	DESCRIPTION	QTY
Mechanical Parts					
K93	(Addition)	————	**XUC25FY-V**	E-RING	1
K94	(Addition)	————	**DFHG1049ZA**	HOLDER, RUBBER, MICROPHONE	1
K115	(Addition)	————	**XQN2+AM2**	SCREW	2
K116	(Addition)	————	**DFHE5067ZA**	SCREW	2
K114	(Addition)	DFHE5025ZA		SCREW	**10→6**

2. Exploded View

(CF-62 Service Manual : Pages 12-1, 12-2.)



3. Servicing the Main PCB, Palm rest cabinet and Mic unit

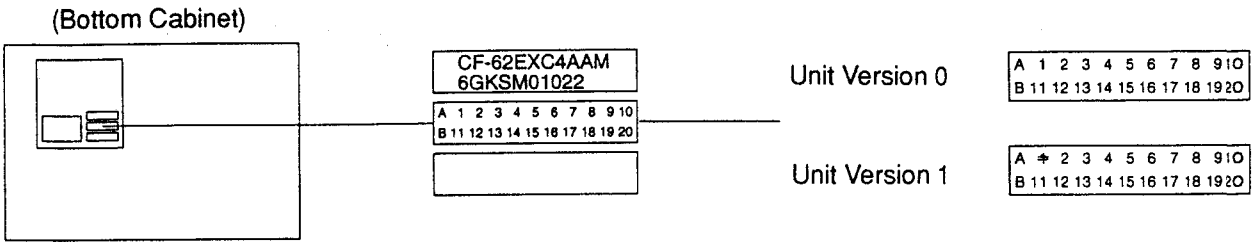
3.1 Change history

	Unit version		
	0, 1	2	3
Main PCB*	DL3U10814AAA	Same as left	DFWV48C0376
	DL3U10814BAA	Same as left	DFWV48C0377
Palm rest cabinet	DFKM0203ZA-0	DFKM0203YA-0	Same as left
Mic unit	On the Main PCB	On the Palm rest cabinet. Lead wire of Mic unit is directly connected to the Main PCB.	On the Palm rest cabinet

*Main PCB..... Upper section XGA compatible
Lower section SVGA compatible

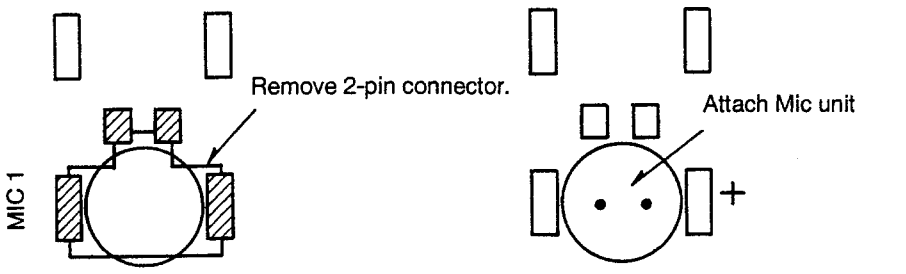
First check the Unit version using the above chart, then modify the Main PCB as indicated below.

3.2 How to identify the Unit version Number



3.3 Servicing Unit version 0, 1

When replacing a defective Main PCB ver. 0,1 with ver. 3, remove connector as illustrated below, then connect the enclosed Mic unit without lead wires to part DFWV48C0376 or DFWv48C0377 of the Main PCB.



Be sure that the polarity is correct.

The red marking on the Mic unit represent the positive charge.

3.4 Servicing Unit version 2

When replacing a defective Main PCB ver. 2 with ver. 3,
directly connect the lead wires, as shown by "a" in Fig.1. Be sure that the polarity is correct.

(When directly connecting lead wires, remove the connector attached to
the Mic unit with lead wires enclosed with servicing part DFWV48C00376 or DFWV48C0377.)

3.5 Servicing Unit version 3

When replacing a defective Main PCB ver.3 with an identical unit,
attach the connector as shown by "a" in Fig. 2.

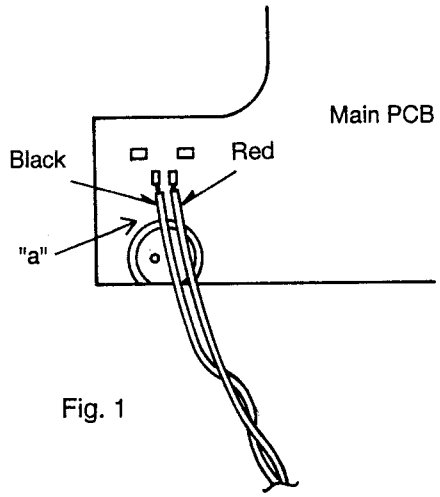


Fig. 1

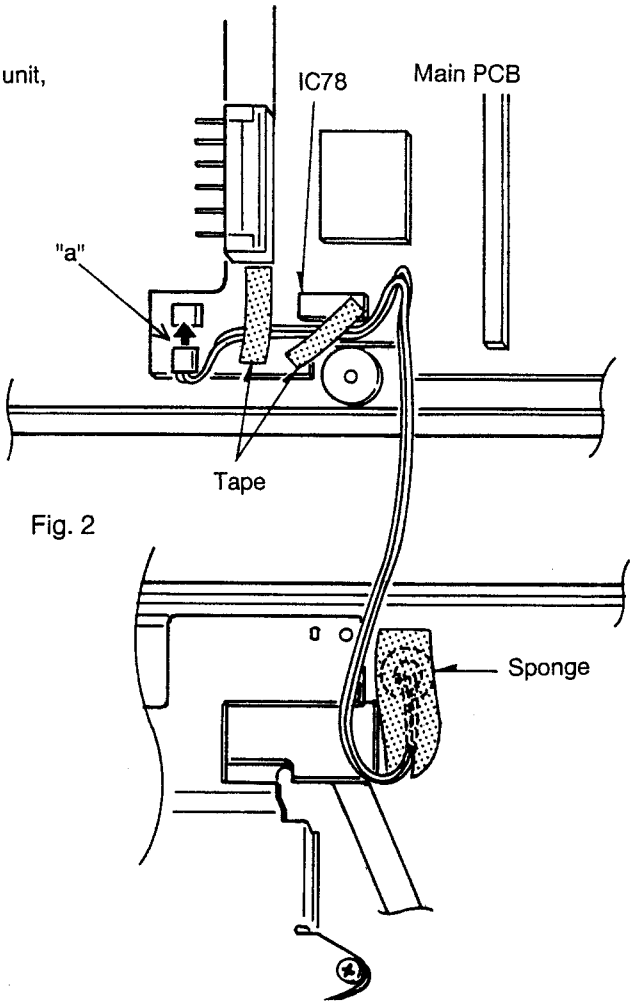


Fig. 2

3.6 After servicing

After installing Mic unit as described in steps 3.4 and 3.5,
attach the two tapes and sponge, as shown in Fig. 2.3.4.

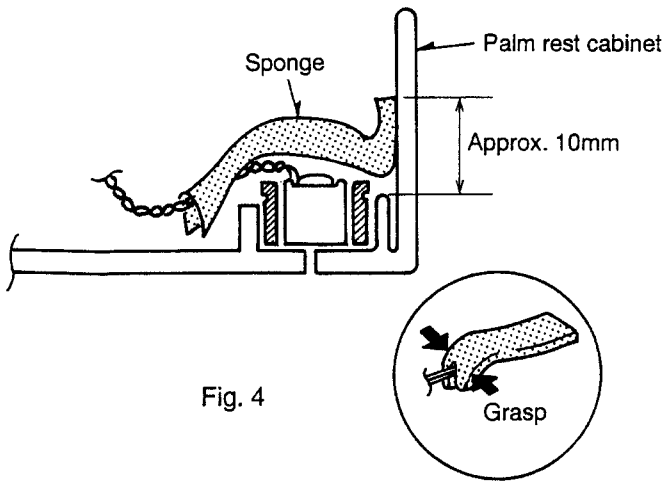


Fig. 4

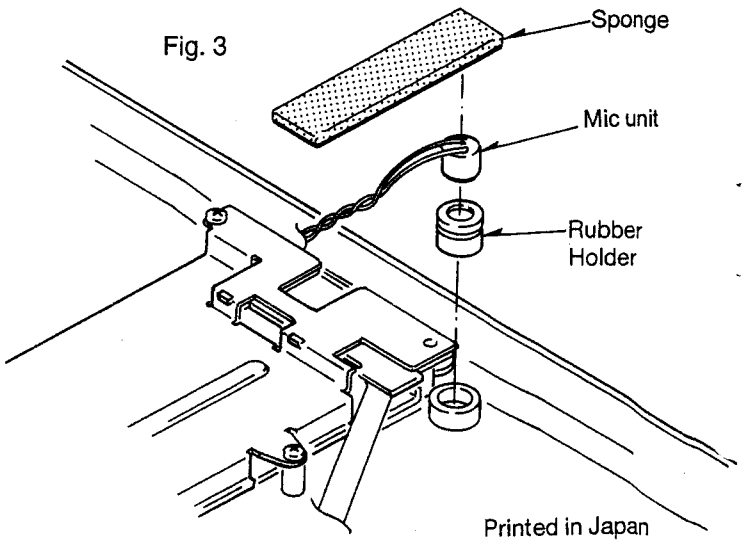


Fig. 3

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Service Manual

Notebook Computer

CF-62

Supplement-3

Please file and use this manual together with the following Service Manual.
CF-62 Service Manual (Order No. CPD9607014C0) for original CF-62 models.
CF-62 Technical Guide (Order No. CPD9609027G0)

This is the Service Manual for the following areas.

M ...for U.S.A. and Canada
E ...for U.K.
G ...for Germany
F ...for France

To: Service Manager

Please attach the insulation sheet (DFMX0383WA) to each unit of the CF-62 series received by the service bench for repairs.

Parts Comparison Table

REF. NO. and AREA	PART NO.		DESCRIPTION	Q'TY
	ORIGINAL	NEW		
Mechanical Parts				
K98	————	DFMX0383WA	INSULATION SHEET	1

The insulation sheet is already attached in version 7 units and later.

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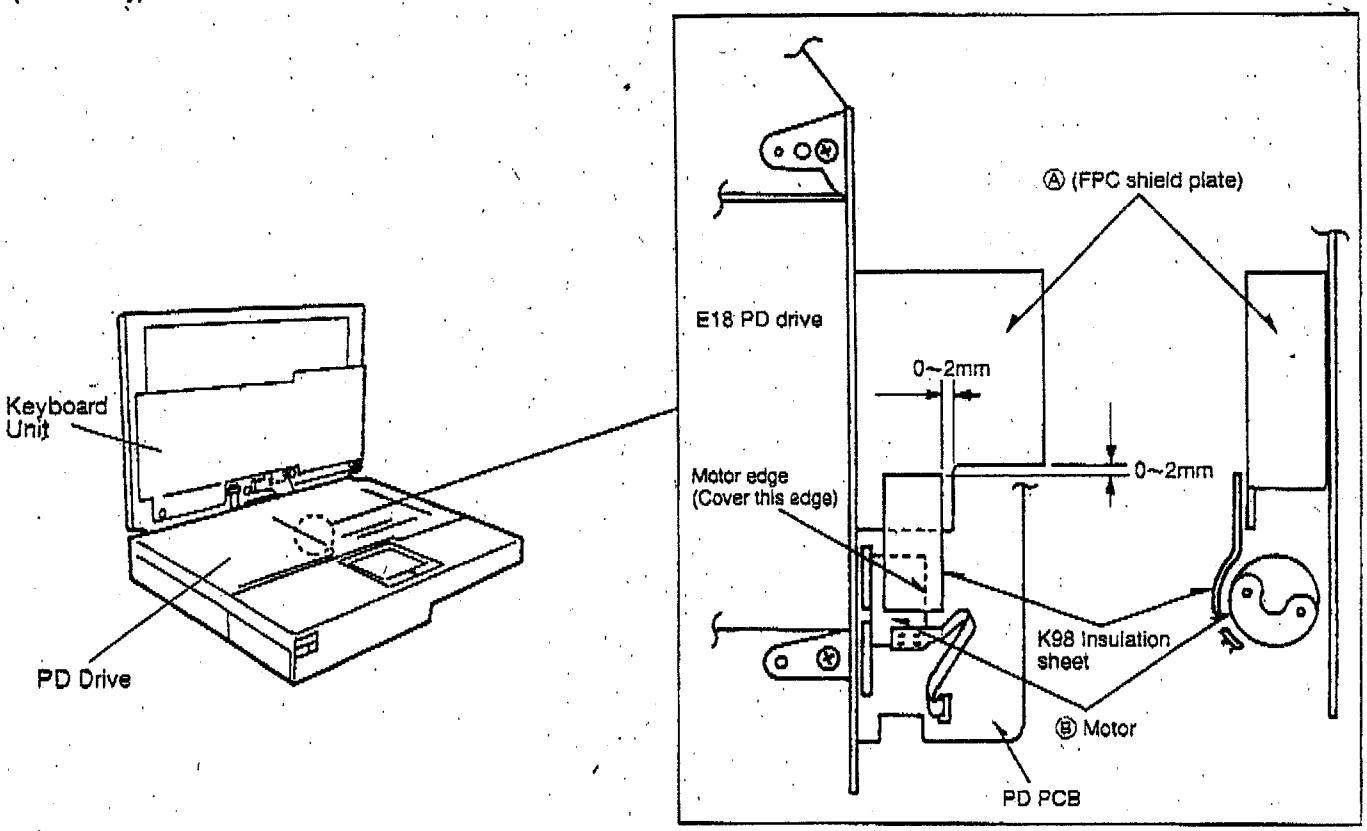
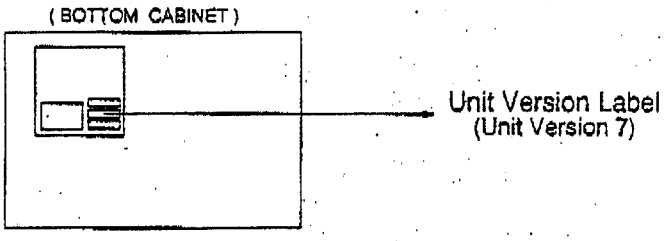
Attachment location

1. Attach by aligning with the end of part Ⓐ (head FPC shield plate).
2. Press on firmly by aligning with the R-shape of part Ⓑ (motor body).



How to identify the Unit version Number



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Service Manual

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CF-62

Supplement-4

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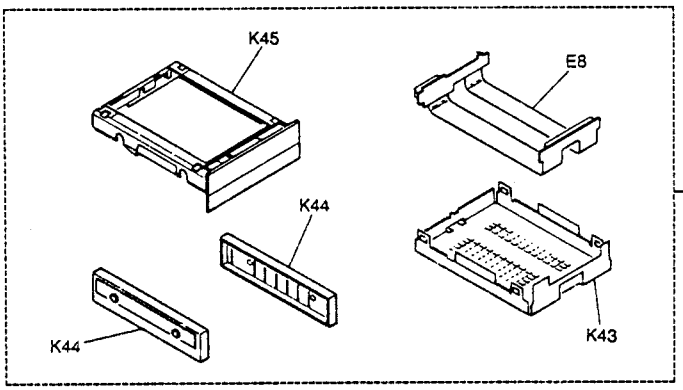
CF-62 Service Manual (Order No. CPD9607014C0) for original CF-62 models,
CF-62 Technical Guide (Order No. CPD9609027G0)
CF-62 Supplement-1 Service Manual (Order No. CPD9612036S0)
CF-62 Supplement-2 Service Manual (Order No. CPD9612038S0)
CF-62 Supplement-3 Service Manual (Order No. CPD9709032S0)

This is the Service Manual for the following areas.

M ...for U.S.A. and Canada
E ...for U.K.
G ...for Germany
F ...for France

Exploded View



Parts Comparison Table

REF. NO. and AREA	PART NO. ORIGINAL	PART NO. **NEW**	DESCRIPTION	Q'TY
Mechanical Parts				
K120	————	**DFWV99A0025**	**HDD Mounting Kit for Support (CF-62xxC, 1.35GB)**	**(1)**
K43	DFWV78A0038		Cover, Bottom, HDD	1
K44	DFHG1021ZA		Damper, HDD	2
K45	DFKE8103YA-0	**DFKE8103YB-0**	Cabinet, HDD	1
Main Block Unit				
E8	DL3U30817AAA		FPC, HDD	1

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Service Manual

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CF-62

Supplement-5

V16652
V17397

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CF-62 Service Manual (Order No. CPD9607014C0) for original CF-62 models,
CF-62 Technical Guide (Order No. CPD9609027G0)
CF-62 Supplement-1 Service Manual (Order No. CPD9612036S0)
CF-62 Supplement-2 Service Manual (Order No. CPD9612038S0)
CF-62 Supplement-3 Service Manual (Order No. CPD9709032S0)
CF-62 Supplement-4 Service Manual (Order No. CPD9712055S0)

This is the Service Manual for the following areas.

[M]...for U.S.A. and Canada
[E]...for U.K.
[G]...for Germany
[F]...for France

Parts Comparison Table

REF. NO. and AREA		PART NO. ORIGINAL	PART NO. NEW	DESCRIPTION	Q'TY
Main Block Unit					
E12	(Deletion)	DFWV44K0024	———	ASS'Y, FDD	1
E12-1	(Deletion)	EME279MF	———	FDD	1
E12-2	(Deletion)	DFUA0168ZA	———	COVER, UPPER, FDD	1
E12-3	(Deletion)	DFKF0153ZA-0	———	CABINET, FDD	1
E12-4	(Deletion)	DFGP0172ZA-0	———	FDD LOCK BEZEL	1
E12-5	(Deletion)	DFHG310YA-0	———	RUBBER FOOT	1
E12-6	(Deletion)	DFHR5354ZA	———	GUIDE, CONNECTOR, FDD	1
E12-7	(Deletion)	DL3U20817AAA	———	FPC, FDD	1
E12-8	(Deletion)	DFMD2083ZA	———	PD MANUAL TOOL	1
E12	(Addition)	———	**DFWV44K0056**	ASS'Y, FDD	1
E12-1	(Addition)	———	**DFJG065ZA-T**	FDD	1
E12-2	(Addition)	———	**DFJE26D102FH**	FPC, FDD	1
E12-3	(Addition)	———	**DFUA0168YA**	CHASSIS, FDD	1
E12-4	(Addition)	———	**DFMX0502ZA**	SHEET, INSULATION, FDD CONNECTOR PCB	1
E12-5	(Addition)	———	**DL3UP0944AAA**	PCB, FDD CONNECTOR RTL	1
E12-6	(Addition)	———	**DFHG1083ZA**	CUSHION, FDD A	1
E12-7	(Addition)	———	**DFHG1084ZA**	CUSHION, FDD B	1
E12-8	(Addition)	———	**DFHE0128ZA**	GASKET	3
E12-9	(Addition)	———	**DFHR5354ZA**	GUIDE, FDD CONNECTOR, PCB	1
E12-10	(Addition)	———	**DFHG1089ZA**	CUSHION, FDD C	1
E12-11	(Addition)	———	**DFHG310Y0**	RUBBER, FOOT	1
E12-12	(Addition)	———	**DFKF0153YA-0**	CABINET, FDD	1
E12-13	(Addition)	———	**DFGP0172ZC-0**	FDD LOCK BEZEL	1

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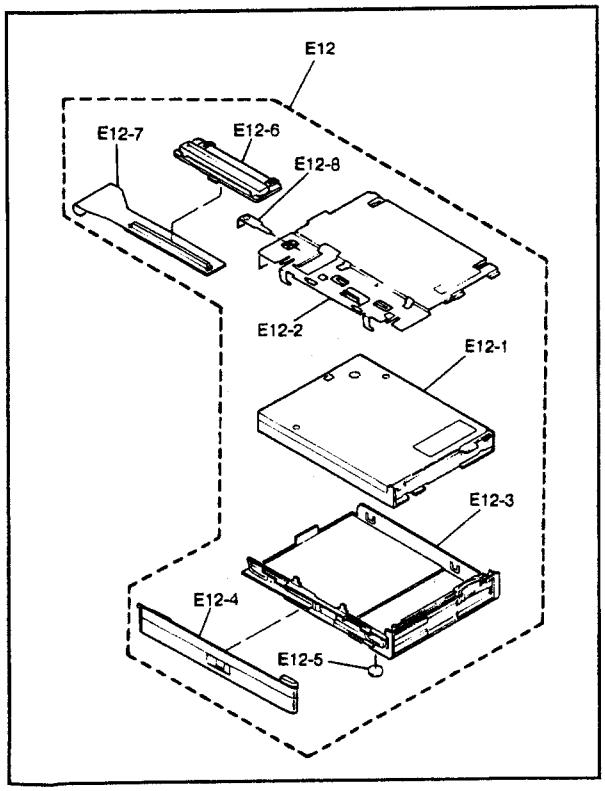
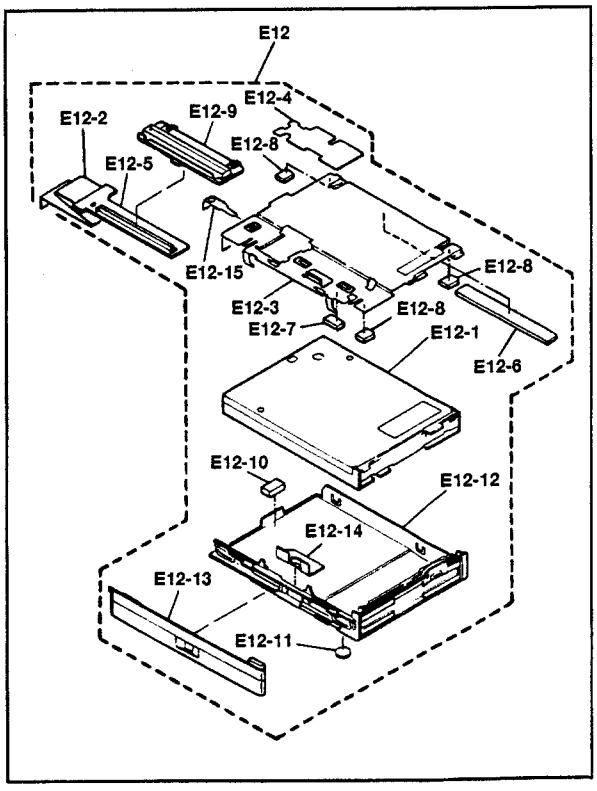
REF. NO. and AREA	PART NO. ORIGINAL	PART NO. NEW	DESCRIPTION	Q'TY
Main Block Unit				
E12-14 (Addition)	———	**DFUS0223ZB**	SPRING, FDD	1
E12-15 (Addition)	———	**DFMD2083ZA**	PD MANUAL TOOL	1
E13	DFJL0023ZB	**DFJL0023ZC**	TOUCH PAD	1
E18-1 (Addition)	———	**DL3U50817AAA**	FPC, PD/CD-ROM DRIVE	1
E24	DFJP081XA136	**DFJP081RA136**	CONNECTOR, PC CARD SLOT	1
Mechanical Parts				
K15	DFKM0204ZA-0	**DFKM0204YB-0**	CABINET, LCD, REAR	1
K16	DFBH1056ZA	**DFBH1056YA**	HINGE (LEFT)	1
K17	DFBH1057ZA	**DFBH1057ZB**	HINGE (RIGHT)	1
K18	DFMX9005ZA	**DFMX9005ZB**	SHEET, INSULATION, INVERTER (CF-62xXxxxxx)	1
	DFMX9006ZA	**DFMX9006ZB**	SHEET, INSULATION, INVERTER (CF-62xJxxxxx)	1
K29	DFGE0023ZA-0	**DFGE0024ZC-0**	SPACER, PC CARD SLOT	2
K72	DFMD2082ZA	**DFMD2082ZB**	POP UP ANGLE 1, KEYBOARD	1
Accessories				
A1 (M, E)	DFQX2502ZB	**DFQX2532ZA**	MANUAL, USER'S GUIDE	1
A1 (G)	DFQX2503ZA	**DFQX2533ZA**		
Main PCB				
IC65	DA38802E102M	**DA38802M275M**	IC, APMC	1
FDD Connector PCB				
C489 (Addition)	———	**ECUV1C104ZFV**	CAPACITOR, 16V, 0.1µF	1
C497~510 (Addition)	———	**ECUV1H101JCV**	CAPACITOR, 50V, 100pF	14
CN301 (Addition)	———	**DFJP103YA160**	CONNECTOR, FOR MAIN PCB	1
CN302 (Addition)	———	**DFJS013ZA026**	CONNECTOR, FOR FDD	1

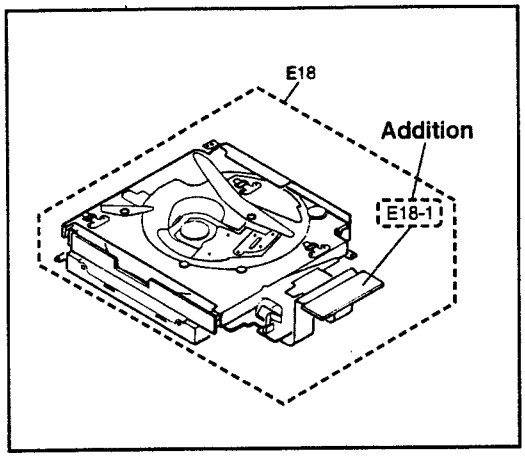
Exploded View

(ORIGINAL)



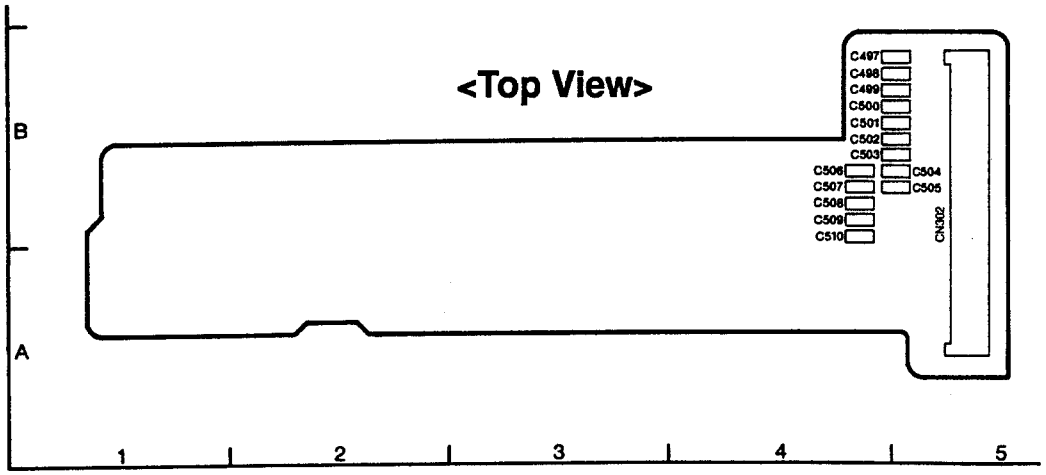
(NEW)

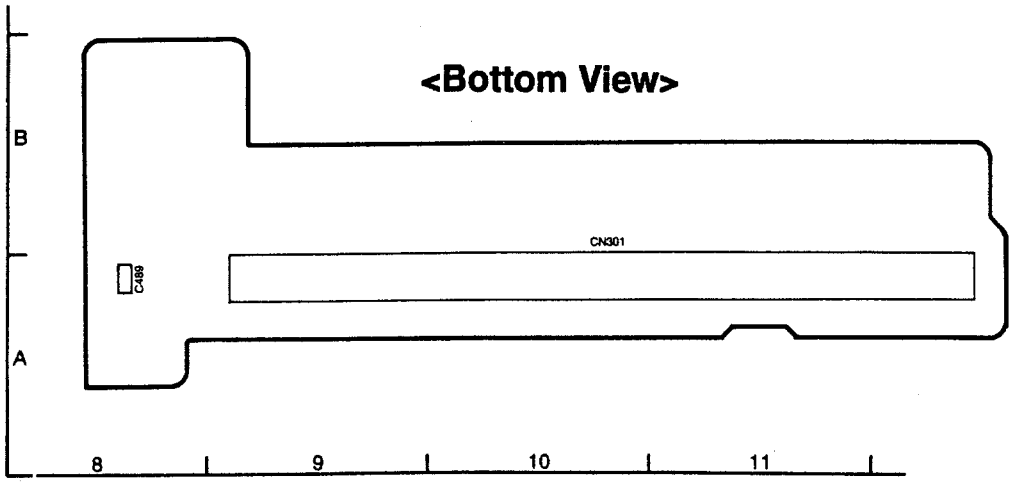




Printed Circuit Board

FDD connector PCB





Schematic Diagrams

FDD connector